

Municipal Journal

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No. 15



GENERAL VIEW OF CONSTRUCTION IN FOURTH AVENUE.

NEW YORK'S SPECIAL GRANITE PAVEMENT

Specification Requirements—Sand Filler Instead of Gravel Required by Closer Joints—Methods of Laying—
Work Done on Fourth Avenue—Perfect Work Difficult to Obtain.

During the past year or more an effort has been made to improve the construction of granite pavements in New York to make them approximate more closely to the high-grade stone pavements laid in England. Two improvements are specially desired in the shaping of the blocks—a truer face and closer joints as they are set in the street. Stone blocks are dressed to shape by the use of a reeling hammer, a tool which does not admit of accomplishing the fine work done by a chisel. In order to make the general contour of a block more accurate, its size is reduced. There is presumably no benefit in a small block other than this. In fact, a large block is more stable in the pavement than a small one, as it has more bearing surface and greater weight to resist the blows of traffic.

The only stones available in New York for paving purposes are granite, trap rock and Medina sand stone. Medina stone is comparatively soft, and stone from different strata lack uniformity. Also the freight to New York is considerable. Consequently this stone has not been used to any great extent, although it has merits in ease in dressing to accurate shape and not wearing to a "turtle back" top surface that are appreciated. Trap rock blocks were used extensively years ago, but the stone makes a slippery pavement and is difficult to dress into well-shaped blocks. The granite available for use

in New York is a good durable stone which can be readily dressed into the general rectangular shape of a paving block. However, the texture of the stone is so coarse that it can hardly be dressed into shape without having greater variations from a plane surface than the latest specifications really require.

One of the first streets in New York to be paved with improved granite was Fourth avenue, north from Fourteenth street. The contract comprised about 22,000 square yards. A large part of the work was done last year. The accompanying illustrations are of sections finished in 1912. The contract price for the work was \$3.55 per square yard. This price practically includes the concrete foundation because the contractor—the Republic Construction Company—bid the nominal figure of one cent per cubic yard for concrete. The concrete is six inches thick. Over the concrete is spread a bed of sand the maximum thickness of which does not exceed one inch.

The specifications require that the blocks "shall be rectangular with tops and sides uniform in thickness, to lay closely, and with a fair and true surface, free from bunches, and so cut or dressed that when laid stone to stone the joints shall not exceed three-eighths of an inch in width. The head of the block shall be so cut that it shall not have more than one-quarter of

an inch depression from a straight edge laid in any direction across the head and held parallel to the general surface of the block."

The permissible size of the blocks is as follows: Length, 6 to 10 inches; width, $3\frac{1}{2}$ to $4\frac{1}{2}$ inches; depth, $4\frac{1}{2}$ to 5 inches. In each contract, however, the contractor must select a definite width of block within the limits prescribed and the blocks must not vary from it more than $\frac{1}{4}$ inch either way.

The concrete foundation is composed of one part Portland cement, three parts sand and six parts of broken stone or gravel. The surface of the concrete is



LAYING THE BLOCKS.

accurately graded, the specifications requiring that no point in the surface shall vary more than $\frac{1}{4}$ inch from a surface parallel to and six inches below the surface of the pavement. The sand bed is carefully spread and raked to a depth of not more than one inch. The stone blocks are hauled in on the concrete and dumped from end-dumping wagons. The delivery proceeds in the direction in which the stone paving progresses; that is, the pavers work with the blocks behind them. Blocks of uniform width are laid in each course, with end joints having a lap of at least 3 inches over the joints of the adjacent course. The pavers are aided in selecting blocks by men called "chuckers" who handle the stones over and keep the proper sizes within easy reach of the paver. The paver works with a hammer in one hand and the other protected with a piece of leather. With the broad or claw-end of the hammer he digs out or shapes the sand bed to suit the stone, puts it in place and taps it with the hammer. A second adjustment of the bed to suit the stone may be necessary.

Sand which has been previously dried by heating is brought in a wheelbarrow by a laborer upon the blocks that have just been laid. With a shovel he fills the joints nearly to the top. Next comes the rammer and following him and working with him a man with two light steel bars. The rammer works with a bow rammer weighing about 75 pounds. In the old-style stone paving, where the stone are laid with a heavy bed of sand, the rammer practically shapes the paving. He can easily drive a block down nearly an inch and, to some extent, raise blocks by ramming those adjacent. But with the light sand bed and concrete base he can drive a block down only a little and cannot raise a low one. The man with the bars has to do the raising now.

One of the greatest difficulties in making an even pavement seems to be the presence of an occasional high block, high because it is a little over size in depth, has too much sand under it or rests on a high place in the concrete. In this case the neighboring blocks

have to be brought up by the bar-men. Prying a block from side to side works more sand under it and the raising process is generally easy.

The pavement is now nearly ready for the pouring of the joints. However, the ramming may have settled the sand in the joints to a depth greater than 3 inches from the top, or it may be the sand is too high. To remedy this, a man with a flat band of steel scrapes out the high places, and, if necessary, calls back the hot sand man to fill the low places.

The paving cement is a coal-tar pitch composed of 20 parts of refined hard natural asphalt, 3 parts of residuum oil and 100 parts of coal-tar pitch. The cement is to have a melting point between 130 degrees and 140 degrees F. The paving cement is heated in large kettles near the work and brought in pouring cans to the work, where it is poured carefully into the joints until they are filled. If the paving cement settles below the surface of the pavement, the joints are gone over a second or third time. All these processes of laying blocks, filling joints, ramming, cleaning joints and pouring pitch are kept close together and every day's work is finished in every detail.

While this special granite paving is a great improvement on the style formerly laid, the advantages have not been gained without some corresponding losses. The joints between the blocks, while they make a pavement less noisy under traffic, are distinctly weaker than the old-style joints which were filled with gravel and pitch. Gravel stones during the ramming process become wedged between the blocks so that each stone is held firmly in the position in which it was left by the paver. The portion of the Fourth avenue pavement which has had heavy traffic for a year seems to show an occasional twisting of a block from its original position, owing to lack of lateral support. Occasionally a block can be found which seems to have tilted, having a high and a low end, due to the difficulty of bedding the blocks, ramming them into place and holding them there with the sand and pitch. Moreover, a few blocks have dropped a fraction of an inch below their proper level. The calks of horses' shoes have already cut out the filling of the joint in many places, a result which would occur in any case but might be retarded for a year or two by gravel joints.



RAMMING AND SANDING JOINTS.

As to the general qualities of the improved granite paving, that so far laid in New York does not seem to have sufficient merits to warrant its use at increased cost on streets for which old-style granite paving would not ordinarily be considered as suitable. The noise of traffic is distinctly less than on the old granite pavement; the rumbling of wagons has been much decreased:

in fact, the click of horses' shoes is the most noticeable sound, as in the case of an asphalt pavement. The rumbling sound has not been eliminated, however; the noise of street traffic is annoying in the lower floors of the office buildings along the avenue and presumably decreases their rental value. Above the fifth or sixth floor the noise is not objectionable. As to the suitability of the pavement for automobile traffic, automobile owners who use the street state that there is a minute vibration to the car which is not good for the machinery. However, they admit that the pavement suits their requirements far better than any stone pavement formerly laid.



POURING JOINTS AND RAISING BLOCKS WITH BARS.

As to the economic value of the pavement, this, of course, depends upon its durability. Thirty or forty years has been spoken of as its possible life. It is doubtful if anyone familiar with this pavement and with other granite pavements in New York laid during the last twenty years believes that the Fourth avenue pavement can stand any such length of time under the traffic it has to bear. Good old-style granite pavements have been so worn as to require renewal in ten years or a little more. That the new pavement can last 20 years and give satisfaction seems like a very sanguine view. Assume that it lasts 20 years. Asphalt could perhaps have been laid on the street for \$2.50 per square yard guaranteed for 10 years and resurfaced at the end of that period to last ten years more at a cost of \$1.50. Comparing these figures with the cost of the granite, \$3.50, and making proper allowance for interest and amortization, there does not seem to be any economic advantage in the granite. However, it is possible that the assumptions as to cost and durability of asphalt were too favorable to that pavement. There is also to be considered the great disadvantage and indirect losses connected with the tearing up of the street during repaving.



SAMPLE OF FOURTH AVENUE PAVEMENT.

It should be said that the department engineers expect to obtain a better pavement when paving gangs have become trained to follow the new specifications; and this and training of the quarry employees in cutting new specification blocks should result in somewhat lower prices.

LIGHT REFUSE INCINERATION.

In the larger cities, where the amount of combustible municipal refuse is great in volume and constant in supply, the question of disposal is more easily dealt with than in the smaller cities and towns, in which this class of refuse is a source of constant complaint and vexation to the city fathers. When this light rubbish is deposited on the dump, the wind scatters it in all directions, it becomes saturated with moisture and cannot be burned except with clouds of nauseous smoke and if dump picking is permitted there is always danger of disease from infected and filthy matters. The flies and rats radiating in every direction from a public dump are always a menace to the public health.

There has lately been a movement in Massachusetts for the disposal of this class of refuse by incineration, which its promoters claim can be effected at comparatively moderate cost, and with the opportunity for recovery of the salable parts as an asset that repays the operating expenses.

The city of Cambridge some six years ago built a large refuse disposal plant at a cost of \$25,000 with a 200 h. p. steam boiler. The assurance was given that power from the combustion of the household ashes and the unsalable refuse would, if used by the city, return a revenue over expenses. This expectation has never been realized, as the small amount of steam power



CAMBRIDGE LIGHT REFUSE INCINERATOR.

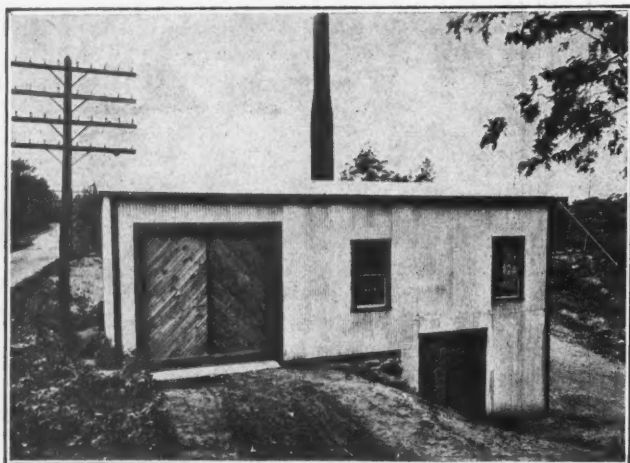
developed could not be utilized, nor was there any effort made to recover any part of the refuse. For five years the city has annually paid \$4,500 for engineers and laborers to operate the plant, with no returns. The steam boiler and machinery are now to be removed and the building transferred to a contractor for receiving and sorting the salable refuse, for which the city will be paid.

When the question of refuse disposal in the northern part of Cambridge—a section too far removed from the refuse plant for economical transportation—was brought up, by direction of Mayor J. Edward Barry, Edward W. Quinn, superintendent of streets, prepared plans for a building and invited bids for a furnace. The designs and proposals of the Jarvis Engineering Company, of Boston, for a Morse Destructor Furnace were accepted and the whole station was completed and ready for operating in two months' time, at a total cost of something less than \$6,000.

The building, of corrugated steel, has a floor con-

veniently arranged for the entrance of the collection wagons, and a picking belt for sorting the marketable portions, with a side connection to a railway track.

The destructor follows the main designs of the furnace of the same type built by this company at the U. S. Navy Yard at Charlestown three years ago. It is eighteen feet in length, nine feet in width and nine feet in height, built throughout with the best quality brick, with an interior lining nine inches thick of spe-



SANFORD, ME., LIGHT REFUSE INCINERATOR.

cially moulded blocks surrounded by an air space of two inches and an exterior of eight inches of selected red brick. The destructor is provided with one large front firing door for the admission of bulky articles and the required number of ash pit and ash stoking doors. The refuse is charged through a top opening twenty-four inches in diameter, and is received upon a special fire grate of an arrangement and form that provides for a very rapid combustion by the aid of large volumes of air required for this purpose. In the interior construction of this furnace use is made of combustion chambers to arrest and destroy all light particles and dust, and of specially devised means for consuming the gaseous inflammable products of the primary fire. The exterior walls are supported and firmly bound together by heavy steel bands and vertical stays.

The conditions of the contract required combustion at the rate of 1,500 lbs. per hour. An official test of the destructor was made by the builders and the city authorities, and it is stated that without any attempt to work the destructor to its capacity the guarantee was exceeded by ten per cent.

The contract for operating this furnace as well as the old plant on Main street has been let to a firm that makes a specialty of operating refuse plants. This company has technical facilities and experience in the business of recovery of marketable parts of the refuse. Under this new arrangement the city will receive a return in cash more than sufficient to pay all capital charges on their investment and provide a sinking fund that will in a comparatively short time return the sum expended for the plant.

The example of Cambridge has been followed at Sanford, Maine, a small town of 5,000 people where the refuse conditions had become intolerable. There a Morse destructor furnace was built by the Jarvis Engineering Company under a contract similar to that at Cambridge. The furnace and the enclosing house are smaller but the former is of the same general design and construction. At the official test the guarantees were greatly exceeded by the results.

This plan of incinerating all combustible rubbish with such incidental parts of garbage as may be collected, and without the larger volume of house ashes, in furnaces of moderate capacity and with inexpensive enclosing buildings, is said to have proven quite satisfactory in every instance.

If there be recovered a percentage of salable material there is always a ready market for it and it is said that the value of this will more than defray all expenses of operating and provide a sinking fund for the comparatively small initial cost of the plant.

HYGIENIC PURIFICATION OF WATER

Filtration Increased Twenty Fold in Twenty Years—Other Purification Methods—Hypochlorite, Copper Sulphate, Ozone.

Abstract of a paper read by ALLEN HAZEN before the Congress of Hygiene and Demography.

Great progress in water purification from a hygienic standpoint has been made during the last decade. It has been of two kinds: A great increase in the number of water supplies that are being purified, and an advance in the standards of efficiency and the methods available for reaching them in practical work. The first is shown by the following table:

TOTAL URBAN POPULATION IN UNITED STATES USING FILTERED WATER.

Year.	Total in Places of more than 2,500 inhabitants.	Sand Filters.	Mechanical Filters.	Total.	Per cent. of urban population supplied.
1870	.....	None	None	None	....
1880	13,300,000	30,000	.....	30,000	0.23
1890	21,400,000	35,000	275,000	310,000	1.45
1900	29,500,000	360,000	1,500,000	1,860,000	6.30
1910	38,350,000	3,883,000	6,922,000	10,806,000	28.20

From this table it appears that in each of three successive decades the population supplied with purified water increased more than five fold, and in 1910 more than 28 per cent. of the entire urban population of the United States was so supplied. There are still a few of the larger cities, the water supply of which is not of as good quality as could be desired, but all of these which supplied notably bad water 20 years ago have improved their supplies, in most cases by excellent filtration plants. The majority of the smaller cities also now furnish water of at least fair quality.

The above statistics refer to filtering water only, but other means of treating polluted water have become so general that it may be conservatively stated that from one-half to two-thirds of the entire urban population of the country is now supplied with water which has been purified to some extent.

Concerning the methods of purifying water, it may be said that while the removal of 97 to 99 per cent. of the bacteria in polluted waters was common some years ago, and even 99.5 to 99.9 in occasional plants, it was obvious that there was some uncertainty as to the safety of the resulting water—that filtration was a relative and not an absolute protection. Some bacteria undoubtedly passed the filters, part of which were probably pathogenic. There were notable cases where filters of inferior or inadequate construction, or operated with less than the usual degree of skill produced, temporarily or permanently, effluents inferior from a bacterial standpoint to those from the best plants; and some instances where diarrhoea, typhoid fever and other indications of water pollution among the consumers had followed such falling off in efficiency.

In recent years there have become available a rapidly increasing number of men who have had experience and have acquired skill in operating filters, and this has

been a most important element in the improvements which have been secured in the average results from such plants.

The recent practice of using hypochlorite of lime has been an important step in advance. Ozone has been tried repeatedly for the same purpose—the destruction of bacteria—but the practical difficulties of carrying out the process effectively and the great expense have operated as obstacles to its general introduction. Hypochlorite seems to have practically the same bacterial effect as ozone, can be applied more easily and is free from some of the uncertainties that have been found adherent to the ozone process. Ozone has certain advantages, however, and if means can be found for overcoming present difficulties its use will be another step in advance.

Sulphate of copper and other metallic salts have also been proposed for killing bacteria as well as algae in water. It is permissible to use such a substance if it is applied to the raw water prior to filtration so as to secure a disinfecting action, and then have the metallic residue removed in the process of filtration. Some of these processes proved to have merit, especially in connection with filtration, but their use was always limited by the unwillingness of most of those in charge of water works to use metallic substances which were more or less poisonous.

The use of hypochlorite of lime has practically superseded all such metallic substances, as it is more efficient and is quickly decomposed in the water into substances that are not poisonous, and within reasonable limits cannot be, by any possibility, injurious.

Other methods of killing the bacteria in filter effluents have been proposed, among which may be mentioned the use of the ultra-violet rays; but no plants for treating water in this way upon a practical scale have been installed in America, and the process is, therefore, one for future consideration rather than of established position.

Hypochlorite of lime has considerable power from a

hygienic standpoint, even when applied to the raw water and without filtration. In this case a larger dose must be used and it frequently must be a variable one, because enough must be applied to furnish oxygen for organic and other matters in the water capable of rapid oxidation in its presence, and still leave a sufficient excess to perform its germicidal work. The amount required for the oxidizable matters obviously depends upon the composition of the water, and this frequently fluctuates rapidly from day to day and even from hour to hour. The treatment of raw water has been less efficient and is less satisfactory than the treatment of filtered water, and has not infrequently resulted in occasional overdoses which have been objectionable in the water.

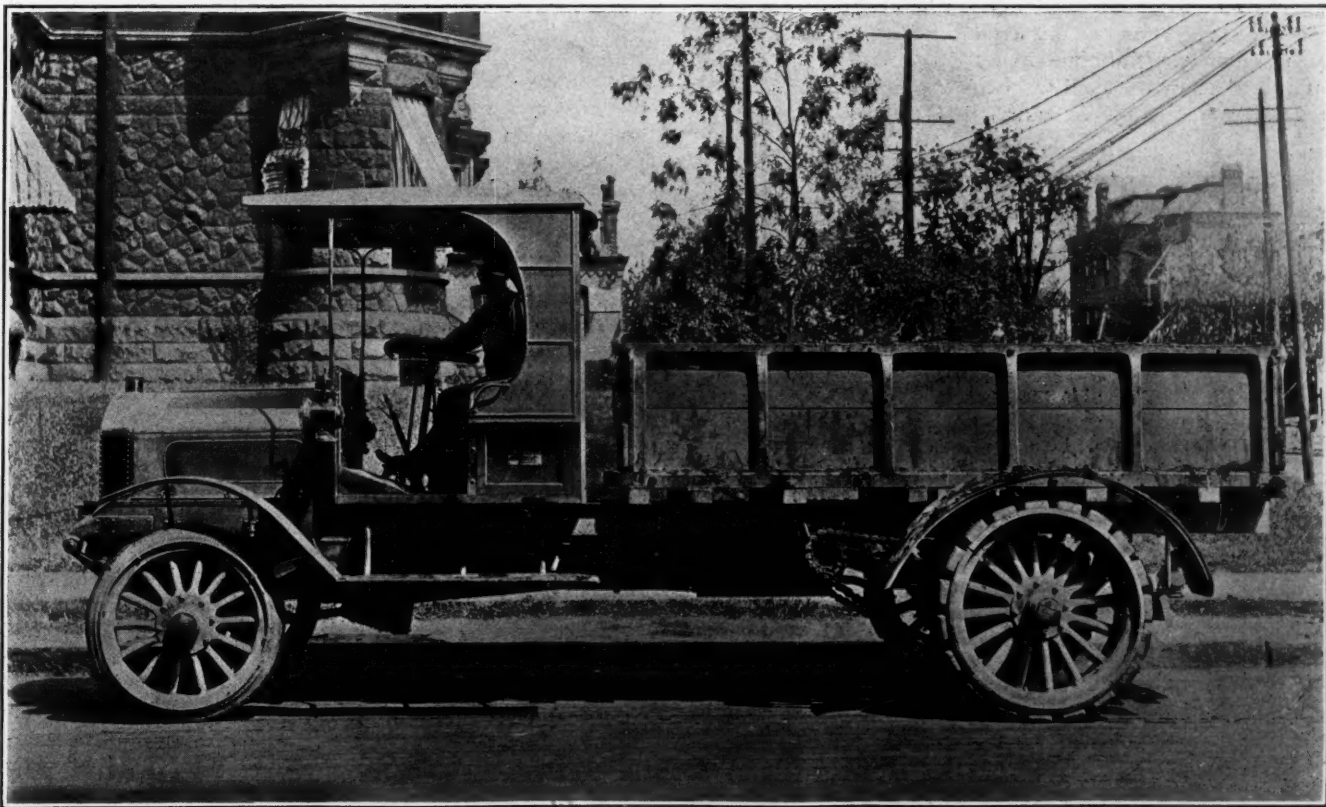
From a hygienic standpoint, the use of hypochlorite of lime is probably the most important event, after the extension of filtration works, in the last decade, and where filtration is employed it permits the delivery of water in which the bacteria have been removed uniformly and certainly to the extent of 99.9 per cent. or more; or, in other words, of water containing only a fraction, and sometimes a small fraction, of the bacteria which would have been present in the effluent under the most favorable conditions of operation without its use.

ST. LOUIS' ASPHALT TRUCK.

By HARRY M. CRUTCHER.

The St. Louis Street Department has recently acquired its first automobile truck. It has been equipped to carry hot asphalt from the municipal asphalt plant to the various repair gangs throughout the city. Although the truck has been in use only a month and has not yet been equipped with a dumping arrangement, its numerous benefits already are being realized. Street department officials say it will do the work of three teams.

Before applying the dumping apparatus those in charge of the street repair work have decided to investigate the trucks used for the same purpose in other



AUTO TRUCK OF ST. LOUIS STREET DEPARTMENT, USED TO CARRY HOT ASPHALT.

cities. Rather than allow the machine to stand idle until such an investigation can be made, they have constructed a temporary body, mounted it upon the chassis and have been getting excellent results at a time when there was a general shortage of teams throughout the city.

The box was made at the municipal garage on the plan of the body of the city's garbage wagons, and was lined with galvanized iron without joints. Inasmuch as the dumping feature will not be added for several months, no end gate was provided. The cost of constructing the box was small. The body was mounted on a 48-horsepower, four-cylinder Mack truck. The chassis cost \$3,900. Its weight, together with that of the body is 8,800 pounds.

Owing to the fact that there has been no need for repair work on the truck, it is difficult to make a just comparison of the relative maintenance cost of the truck and the wagons. The latter, together with their teams, are hired by the city. The truck makes only direct trips from the asphalt plant to the repair jobs, while the teams are used for a long haul to the work from the plant and are then sent out on a short trip to take old material to the nearest dump. The wagons carry, on an average, 47 cubic feet of asphalt, the capacity being 50 cubic feet. The body of the truck has a capacity of 84 cubic feet and carries 80 cubic feet on an average.

Walter L. Hempelmann, engineer of bituminous pavements, says the city will do a great deal of repair work next year, when the maintenance periods of several contracts expire. More trucks will be asked for then to handle the increased work. During the summer just ended there has been a shortage of wagons. About eight teams were used to haul asphalt.

Speaking of the new automobile truck, engineer Hempelmann said: "Of course, we realize the truck as it is at present is not as economical as it will be when the dumping feature is installed. Our men have to shovel the material out and that work takes up time that could be used for other purposes if we had the dumping apparatus. We had the truck on hand, however, and as we needed it to carry the asphalt we fitted it up as well as possible for the time being. We will make a study of the mechanism used by other cities on their dumping trucks and we hope to install that feature this winter.

STREET CLEANING IN PORT ARTHUR.

By W. S. BOWDEN, Street Commissioner, Port Arthur, Ont.

The construction in the United States and Canada each year of many million square yards of high-grade pavements, which require a constant and thorough system of cleaning, places upon the taxpayer an ever-increasing responsibility to provide funds to carry on this work, and also upon the officials in charge of it the necessity of making themselves fully acquainted with the best methods.

It seems to the writer that it would be of great assistance to many who have charge of this class of work if some definite, specific and complete information regarding the methods adopted and results obtained in other places could be given through the columns of our leading periodicals. Occasionally we may attend a convention or visit a neighboring city where we hear addresses and meet others engaged in our special line of work from which we derive much inspiration and help; but most of us are too busy to go abroad during the busy season to study at first hand the things we require to know.

It is for this reason that I have prepared a short statement of the local conditions and cost of cleaning 81,869 square yards of permanent pavement in the city of Port Arthur, Canada.

The pavements covered by this statement are of five

different kinds, all well known and laid generally throughout the United States and Canada. They consist of 30,956 square yards of sheet asphalt, 29,451 square yards of asphalt block, 15,885 square yards of bitulithic 4,517 square yards of asphaltic concrete and 1,060 square yards of concrete. These pavements are laid in eleven streets and total 3.165 miles. About two miles of this is located on two business streets which run parallel with the water front. One of these, about a mile in length, which is paved with asphalt block, contains a double track street railway; and the remainder of the paving is on short parallel and cross streets. Earth roads lead to these pavements at forty different points.

In cleaning these pavements, seven street cleaning men are employed using Menzie street cleaning carts, each with two cans; also a Sanitary automatic street flushing machine, which is used half of each day for flushing pavements, and the remainder of the day as a sprinkler, the latter service not being charged to pavement cleaning. One man with a team and dump wagon collects the street sweepings from the cans placed at the curb, which material is carted an average distance of one mile. The average amount collected is about eight cubic yards per day.

The street foreman is also in charge of the city scavenging department, so that only half of his time is charged to this work. As Port Arthur is widely known as a summer resort, and visitors are constantly touring the city, the pavements are kept almost spotlessly clean, except that no work is done on Sundays.

The daily cost of labor to clean this 81,869 square yards is as follows:

7 men using Menzie carts, at \$2.20.....	\$15.40
1 team and man, flushing (5 hours).....	3.00
1 team and man with dump cart.....	6.00
1 street foreman (5 hours).....	1.60

Total cost per day.....\$26.00

This shows that each man with a push cart covers an average of 11,695 square yards per day and that the cost of labor per square yard is .03176 cents per day.

In this northern country our streets are usually free from snow for about 240 days in each year, so that the cost per square yard for labor for the entire summer season would amount to 7.62 cents per square yard.

SHADE TREES IN MANCHESTER.

While engaged in removing the brown tail and gypsy moth nests from trees in the City of Manchester, N. H., inspectors were required to keep accurate tally of the number of trees and the kinds that are to be found throughout the highways, parks, commons, schoolyards and city farm within the city limits. The total number of such trees was found to be 29,325.

Of this number there were 4,995 elm trees, 9,256 maple trees, 839 oak trees and 13,197 other kinds.

VENTILATING A CONVENIENCE STATION.

The public convenience station at Manchester, N. H., which was described in Municipal Journal of January 25, has been opened and in use for some time. The ventilating arrangements have been giving the committee in charge a great deal of trouble because, while it had at first been planned to run the main boiler all the year around, this idea was later abandoned because of economical considerations, and the foul air positively refused to leave the chambers. On damp days especially the interior of the structure was not a pleasant place to linger in.

A small heater has been installed and this has solved the problem. It is being run both day and night and keeps the air perfectly fresh and clear, even though it be damp or raining outside.

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Contributions suitable for this paper, either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

OCTOBER 10, 1912.

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Progress in Water Purification.

The International Congress of Hygiene and Demography, which met in Washington, D. C., last month, was a notable event for sanitary engineers, biologists, health officers and others interested in the health problems of the city and nation. As is generally the case with international congresses, whether they apply to hygiene, good roads or what not, the chief interest and value lay in the gathering together of the leading specialists of all the more advanced civilized nations and a comparison by them of the more or less established methods which have been developed in each of the countries. At this congress one was able to meet and converse with the leading sanitary authorities from England, France, Germany and several other nations. But few novel ideas were advanced, at least in the formal papers, most of these being confined to a concise statement of the present condition of the several sciences and practices in the countries of the respective authors. There was thus presented a bird's-eye view of the progress and promise of sanitation throughout the civilized world.

Among the papers of special interest to municipal sanitarians and dealing with conditions and practices in the United States were two presenting, in brief, statements of the recent progress of the purification of water, one of these treating the subject from the hy-

gienic point of view, the other from those not directly hygienic. The first of these will be found on another page of this issue; the second we expect to publish next week. The growth of water purification in this country has been so continuous that, to the younger generation at least, it may come as something of a surprise to learn how great has been the growth during the past few years. According to the statements of Dr. Hazen in the paper referred to, in 1870, there was not a single plant in the country for filtering public water supplies. In 1880 only 30,000 of the entire country's population was supplied with filtered water, in 1890 only about ten times this number. During the twenty years from 1890 to 1910 the growth of water filtration increased so rapidly that by the latter year nearly eleven million population was being furnished with filtered water.

Another interesting point which was brought out by these figures is the relative increase in slow sand and mechanical filters respectively. Between 1880 and 1890 practically all the new filter plants were of the rapid or mechanical type; from 1890 to 1900 the increase in slow sand filters was nearly three times as great as that of mechanical filters, while from 1900 to 1910 the combined capacity of the slow sand filters increased by three and a half million gallons, while that of the mechanical filters increased by about five and a half million gallons. The increase in slow sand filters in the decade from 1890 to 1900 can undoubtedly be attributed to the work of the Lawrence Experiment Station of the Massachusetts State Board of Health, while the rapid introduction of mechanical filters in the following decade was due to improvements in the physical features of these and their introduction into the larger cities of the Mississippi and Ohio river valleys, it being found that the mechanical filters were better adapted than the slow sand filters to the clarifying of the muddy waters of these rivers.

As the author states, one of the most important and remarkable developments of the last decade has been the use of hypochlorite as a germicide. Certainly no other development in the treatment of water has been adopted by so many cities within two years after its value was first proved in a practical plant, and now it is probable that approximately 200 plants, both municipal and private, are using hypochlorite, either continuously or as an occasional safeguard.

Pollution of Harbor Waters.

In a paper before the recent convention of the American Public Health Association, Dr. George A. Soper, president of the Metropolitan Sewerage Commission, described the conditions of the waters of New York harbor which he and the commission believe essential; which conclusions would apply to a very large degree to all other salt water harbors of large cities. The specific requirements which the commission recommend to be enforced are as follows:

First—Garbage, offal and solid matter, recognizable as of sewage origin, shall not be visible in any of the harbor waters.

Second—Marked discoloration or turbidity, due to sewage or trade wastes, effervescence, oily sleek, odor or deposits, shall not occur except perhaps in the immediate vicinity of sewer outfalls, and then only to such an extent and in such places as may be permitted by the authorities having jurisdiction over the sanitary condition of the harbor.

Third—The discharge of sewage shall not materially contribute to the formation of deposits injurious to navigation.

Fourth—Except in the immediate vicinity of docks

and piers and sewer outfalls, the dissolved oxygen in the water shall not fall below three cubic centimetres per litre of water. Near docks and piers there should always be sufficient oxygen in the water to prevent nuisance from odors.

Fifth—The quality of the water at points suitable for bathing and oyster culture should conform substantially as to bacterial purity to a drinking water standard. It is not practicable to maintain so high a standard in any part of the harbor north of the Narrows, or in the Arthur Kill. In the lower bay and elsewhere bathing and the taking of shellfish cannot be considered free from danger of disease within a mile of a sewer outfall.

In connection with the investigation by the committee, eight experts were engaged by it from the professions of engineering, chemistry, biology and sanitary science. Each was asked certain questions, to be answered from his own viewpoint. These opinions have been received and compared.

All laid emphasis on the appearance of the water and insisted that the standard of cleanliness should be so framed as to provide that the water should look clean. Most of the experts agreed that it would not be practicable to keep the water clean enough to make bathing entirely safe, but that it would be both feasible and desirable to maintain in satisfactory condition bathing places near the sea and within easy reach by the public. The sanitary engineer thought that if the open waters of the harbor were kept as clean as the requirements of business, pleasure and recreation demanded, there would be little danger to the public health, provided bathing and the taking of shell fish for food were restricted or prohibited. The epidemiologist did not consider that there was great danger of sickness from bathing in polluted water unless the sewage were discharged close to the bathing place; while on the other hand the sanitary engineer was persuaded that considerable sickness was produced by bathing in the polluted water of New York harbor. All believed it unnecessary that the waters of the inner harbor should be kept pure enough to make bathing perfectly safe if suitable bathing places could be maintained in satisfactory condition.

Both the American chemist and the biologist believed that the waters of the inner harbor should be abandoned for bathing, and all the experts considered it impracticable to keep them pure enough for oyster cultivation. The value of the oyster industry did not appear to the sanitary engineer to be of sufficient consequence to warrant the construction of the expensive works which would be necessary to maintain the inner harbor sufficiently pure for the cultivation of oysters; and the same opinion was held by the hygienist. The health officer would not permit oysters to be cultivated anywhere within the Metropolitan district except under strict supervision and control, and the biologist thought it might ultimately be necessary to sacrifice all oyster beds within the Metropolitan district.

POPLAR ROOTS STOP SEWERS.

By E. S. RANKIN, Engineer Sewers & Drainage, Newark, N. J.

The stoppage of sewers by poplar tree roots is getting to be rather an old story, but the enclosed photograph shows a record breaker as far as Newark, N. J., is concerned.

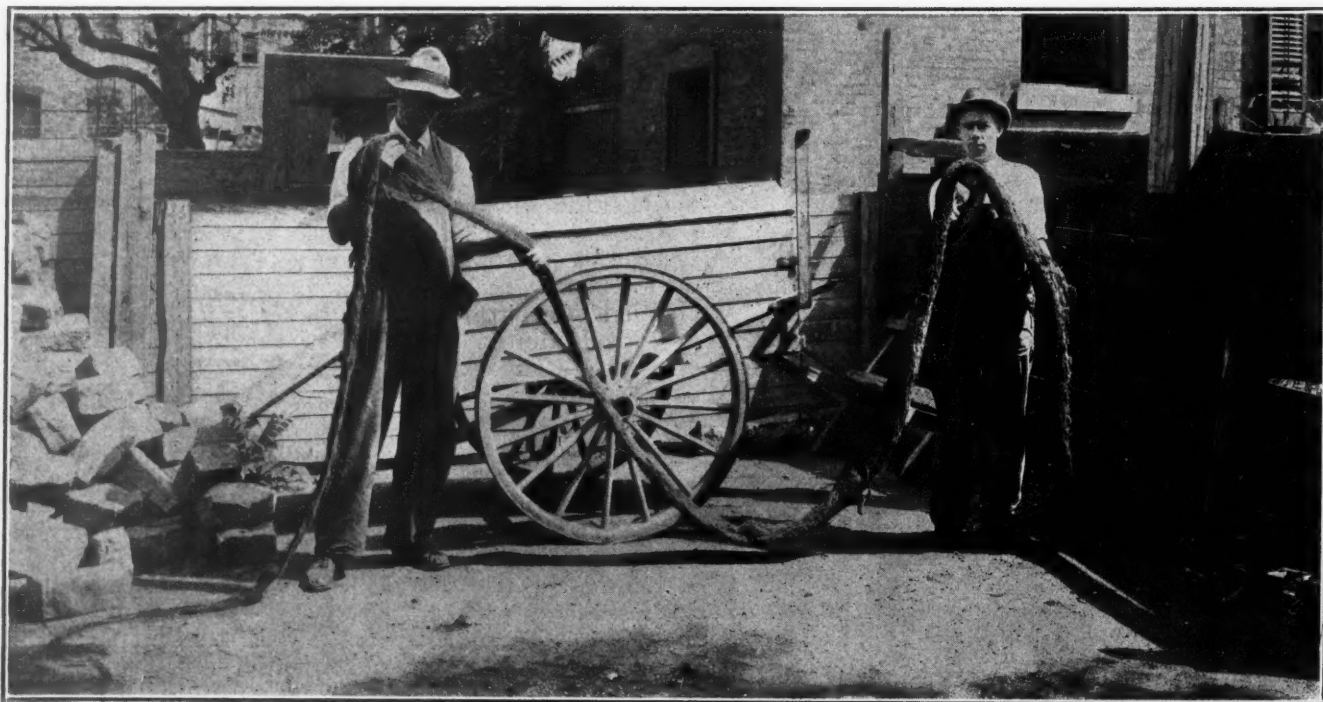
This root, 29 ft. 7 in. in length, was taken from an eight-inch pipe, having entered through a defective joint. The sewer lies in the centre of a 30-foot street, so that the parent tree was at least 15 feet from the point of entry.

Most of our root troubles occur in house connections, though occasionally we have one in the main sewer as in this instance.

Since this department assumed entire charge of laying and repairing house connections in 1907, we have had to relay connections each year as follows:

	Trouble caused by roots.	Other Causes.	Total.
1907	3	10	13
1908	8	25	33
1909	18	62	80
1910	33	54	87
1911	31	38	69
To Sept. 1 1912	21	35	56

The trouble has invariably been caused by poplar roots, and the planting of these trees in the streets is now prohibited.



POPLAR ROOT NEARLY THIRTY FEET LONG TAKEN FROM SEWER.

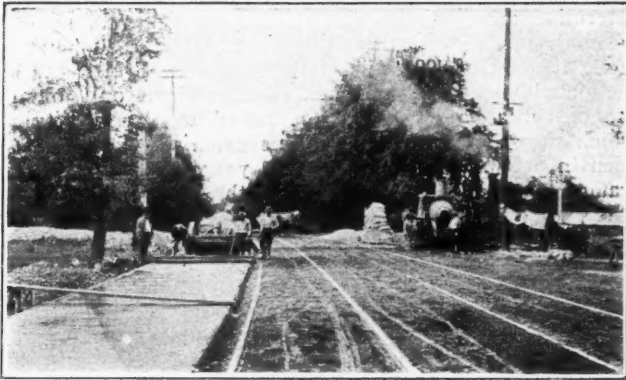
NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance.

ROADS AND PAVEMENTS

Saves Labor and Cost of Construction.

Milwaukee, Wis.—An illustration is given of concrete road building on the new Chicago road at Milwaukee.



Courtesy Milwaukee Sentinel.

CONCRETE ROAD IN MILWAUKEE, WIS.

The method of construction is interesting. The contractor has placed the mixer at one side of the road and is hauling the material to the section being paved in a one horse-power dumping and spreading cart, which distributes the material in place with very little labor.

Over \$100,000 Spent for Paving.

Owatonna, Minn.—The paving of three of Owatonna's business streets is now completed, and the work on the other two has begun. Creosote block has been used entirely. The city has spent close to \$100,000 in this improvement alone this year.

Asphalt Repair Plant in Operation.

Fort Wayne, Ind.—The new municipal asphalt repair plant was put into operation for the first time, when Superintendent William Grieser started a gang of men patching West Berry street. Mr. Grieser formerly was with the Barber company and has had years of experience in asphalt work. A number of streets will be patched this fall, but the efforts of the plant will be devoted in the main to patching the bad holes in streets on which the guaranties have expired, so that winter will not find them full of deep chuck holes that render them dangerous for travel. Under the construction of the state law that gives the board of public works power to repair streets, it is claimed that the asphalt plant may not be employed to do entire resurfacing jobs, since such work comes under the head of street improvement, and may therefore be done only by assessment of benefited property owners. When the next legislature convenes an effort will be made to have this section of the city's charter so amended that municipalities controlling their own asphalt plants may resurface streets on petition from the owners.

Autoists Declare Oil Injures Roads in N. J.

Newark, N. J.—Declaring that the grade of oil which is now used on the public highways is unfit for road construction and that it is both detrimental to the road and dangerous to auto travel, the New Jersey Automobile Trade Association is on record as being opposed to the further use of oil on state roads until a thorough investigation of its fitness is made. The association is not altogether against the use of any kind of oil in road construction. Whether oil as a road material is beneficial has not been absolutely fixed in the minds of the trade autoists, but they declare as a positive fact that the present grade of oil used on state roads is unfit for the purpose. It was declared that it ruined the foundations of the roads by softening them, and that because the roadbeds became soft, they break up more easily

and that this was in a measure the reason why we have so many miles of poor roads in New Jersey at the present time. Not only were the autoists positive that their investigations along this line have proved to their satisfaction that oil was ruining the roads, but according to the statement of George Blakeslee, of Jersey City, the president of the association, they had converted the state department of public highways to the same opinion. With regard to use of oil by municipalities in laying dust on the roads, the trade association will endeavor to get in touch with the authorities and ask them to discontinue its use until the State Department makes some definite decision on its good or ill effects. To avoid the danger of accidents it was declared to be the sense of the trade association that no oil should be put down without a top dressing of stone dust or some other material.

Would Save City Money.

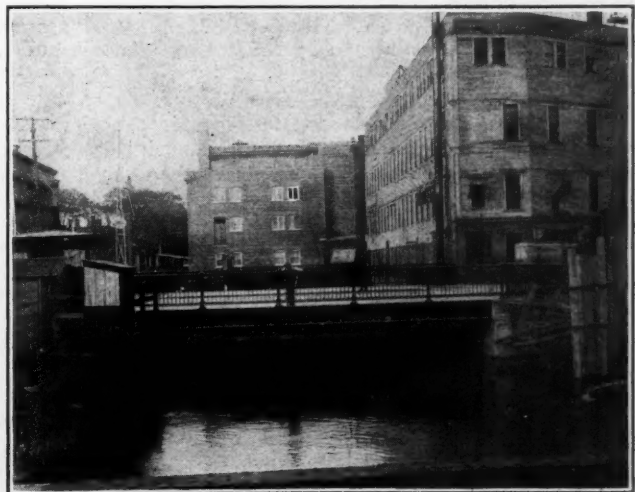
Reading, Pa.—Ex-Mayor Adam H. Leader offered to the Board of Public Works to repair all the streets and save the present administration $7\frac{1}{2}$ cents an hour, because he could get lots of laborers at $17\frac{1}{2}$ cents an hour, while the city paid 25 cents.

Plans for Highway Across Country.

Bay City, Mich.—Carl G. Fisher, father of the project for a transcontinental highway across the country, who has spent a year in the work of preparation for launching the plan, says "When built, the promoters plan to plug every telephone pole along the route through an arrangement with the telephone companies, enabling any motorist in event of trouble to at once telephone to the nearest repair shop or hospital. It is also proposed to sign board the route, placing one sign for every donor of \$1,000, such sign to bear the names plainly of the donors. These will be permanent signs erected to stay for a lifetime and will be expensive.

Complete Lowell's New Bridge.

Lowell, Mass.—An illustration is given of the new bridge over the canal at the junction of Dutton and Market streets, which is now open to traffic, although not quite completed. The bridge is the only one of its kind in Lowell and is about the best structure ever placed



Courtesy of Lowell Sun.

THE NEW MARKET STREET BRIDGE JUST OPENED.

over a body of water, considering its size. Its construction consists of steel girders set on cement beams and reinforced concrete. The roadway is built of six-inch granite blocks covered with cement, with pitch fillers between the blocks. The sidewalks are of granolithic, as well as the approaches to the bridge.

Navarre Road Opened.

Massillon, O.—The Massillon-Navarre road, paved by A. F. Wendling, of Massillon, has been officially opened. The county commissioners say that the completed section of pavement is one of the best in the county. The road was closed on June 1st, and practically finished on September 14th. Traffic during this time has proceeded through Forest avenue and the Massillon state hospital ground. The stretch between the new pavement and the present end of paving at the Massillon cemetery is being paved by the city. Until this is completed, however, traffic to Navarre and back will be retarded.

Complete Mission Street Viaduct.

San Francisco, Cal.—The completion of the concrete viaduct bridging Mission street over the Islais creek gap, which structure has been formally dedicated, is the latest and one of the most important evidences of the rapid and substantial growth of San Francisco. Built at a cost of \$250,000, this bridge will not only increase the transportation facilities in that portion of the city, accommodating the heavy traffic which will follow the present course of the Mission road to peninsular points, but it adds in a considerable degree to the city's metropolitan aspect. How rapidly San Francisco is expanding from its center, may be seen from the fact that the viaduct is about five miles out from the eastern end of Mission street and that a well-built section extends beyond it. Building operations there are steadily in progress and will be further stimulated by the new structure. San Francisco has many plans for tunnels and other aids to rapid and convenient communication between the city's center and its outlying business and residential sections. Not all of these can be carried out at once, but will be as soon as the growth of these sections warrants and the funds are made available.

Completes \$22,000 Street Paving Job.

Puyallup, Wash.—Work of paving Meridian street from the end of the present paving to South Hill, a distance of nearly one mile, has been completed at a cost of more than \$22,000. The completion of this stretch of Puyallup's main street provides the city with a thoroughfare far ahead of any other city in the valley or any other city its size in the state, according to members of the city council. The Meridian street job is the first unit of extensive paving being done by the city along its principal streets. The next thoroughfare to be paved will be Stewart street from the end of the present paving to the city limits on the west. This road will be met at the city limits by a brick highway leading to Tacoma, the work to be accomplished by the county commissioners.

Pave Mountain View Streets.

Mountain View, Cal.—Mountain View is experimenting with gravel paving on a number of the principal streets. Villa, Hope, California and Dana streets have been graded and graveled. George Campbell, who has had much experience in roadmaking in this part of the county, is the contractor. The streets that have been graveled and have had time to settle somewhat, show good results. The gravel is well watered and carefully spread, and it appears that it will make a fair pave. It had been the intention of the town trustees to pave the streets named above with asphalt, or some form of bitumen paving, but after investigating the ground and the condition of the sewer and waterpipes it was decided to gravel for the present and defer the more expensive paving until such time as necessary repairs have been made in the sewer and water systems.

Repair Plant Will Be Used.

Dayton, O.—About nine thousand seven hundred square yards of repair work has been done by the Andrews Asphalt Repair Company, there remaining substantially about five thousand five hundred yards yet to be repaired to fulfill the contract. The suggestions of the Chamber of Commerce, to the effect that the contract be limited to 15,000 square yards, and that the repair work that the

other contractors are obligated to do and have planned to have the city make the repairs, be included in this amount, are being followed. When the Andrews Company completes its work, then whatever money remains in the fund, which will be a comparatively small amount, will be devoted to the repair of the streets under the supervision of the city authorities. The repair plant has been put in condition now and will be used in this connection.

Make Experiments on New Road Construction.

Harrisburg, Pa.—Experiments are under way by the State Highway Department in counties of the State to determine the best methods of road construction, so that when the Commonwealth begins its general road building under the \$50,000,000, which it is expected will be voted by the people next year, Pennsylvania will not only obtain the best roads but those best suited to the locality in which they are to be built. This experimental work has been in progress for more than a year, and reports upon traffic and the manner in which the various roads are standing up are made every few days. In selecting the locations for experimental purposes the department picked out typical rural, manufacturing, automobile travel and suburban roads, and material was used which was believed to possess qualities when laid that would best resist the wear and tear peculiar to each. In some of the farming communities road compositions have been used which will enable good time to be made by ordinary narrow-tired market wagons and at the same time be easier on the horses' hoofs than the harder roads laid down in industrial section where teaming is heavy.

Good Roads Being Built.

Dentonio, Tex.—That the irrigated district of Dimmit county is alive to the importance of good automobile roads is shown by plans to have Dentonio and Asherton connect with the San Antonio-Laredo highway, seventy-two miles of good auto road, are in course of construction. The route lies from Dentonio to Asherton, thence down the Asherton & Gulf railroad to Catarina, thence to Cotulla in La Salle county, where connection is effected with the San Antonio-Laredo highway. Eight new steel bridges will be erected over the streams crossing this route. The order for the construction material has already been placed, and the erection of the bridges will commence as soon as the steel is received. The building of this piece of road will shorten the automobile route from San Antonio to Dimmit county about eighty miles, as the only available road at present for auto travel from the Alamo City to Dimmit county is via Uvalde.

Alum Rock Park Road Opened.

San Jose, Cal.—The reconstructed road leading into Alum Rock park, which has just been completed, was formally opened by Mayor Monihan, who made a short address from an automobile at the summit. The mayor told those who had assembled to see the road opened that the commissioners have saved the city at least \$5,000 in the work, which cost \$4,000. Several contractors have been heard to remark that they would not touch the work for less than \$10,000. The work was not let out by contract but was done by the day and John Waibel placed in charge of the squad of men. H. B. Fisher, the engineer, succeeded in his efforts to make the grade as easy as possible and it averages about 2 per cent. The road is composed of dirt for the present but it will be graveled in a few weeks. In grading, a large bed of gravel was found about midway on the road and from this spot sufficient gravel to cover the entire road may be obtained at small expense. A spring on the road will furnish plenty of water for sprinkling and drinking purposes and it is proposed to construct a tank as a receptacle for the water. One of the best views to be had from any road in Santa Clara county is obtainable at several points on the thoroughfare and it is the belief of the park commissioners that this fact will be one of its best assets. Inspiration Point commands a splendid view of the entire peninsula.

County Buys Toll Road.

New Albany, Ind.—The Floyd county commissioners have purchased 131-3 miles of the New Albany and Paoli toll road in Floyd county at an appraised valuation of \$1,000 a mile. Bonds are to be issued, payable in from one to five years. The toll road has been in existence more than 75 years. New Albany is the terminus of the only other toll road in Indiana, running to the Harrison county line, and known as the Corydon pike.

Heavy Traffic Wears Macadam.

Watertown, N. Y.—Commenting upon the condition of the macadamized streets of the city, after a trip over all of the improved thoroughfares, Commissioner W. O. Ball, of the board of public works, states that the summer's wear had been especially severe. Mr. Ball expressed the belief that the rainy weather had been an important factor in the wear and tear on the macadam, as well as the heavy travel and automobiles, many of which were equipped with anti-skid chains frequently on account of the slippery condition of the streets and of the country roads. The commissioner is of the opinion that the city could make no better move towards saving money next year than to resurface and repair some of the present macadamized streets. In some parts of Academy street, in the residential section, paved with bituminous macadam, Commissioner Ball discovered many depressions, while at other points the crushed rock appeared to be working to the surface.

Build 2,700 Miles of Roads.

St. Paul, Minn.—Contracts for the construction of 2,700 miles of highway in Minnesota next summer will be authorized by the state highway commission this winter. Of this, 700 miles will be entirely new road in the northern part of the state, surveyed and constructed under the rural highway law enacted by the last legislature. The state department is now at work mapping out the work for next summer and is arranging to have all the surveying, stumping and sand hauling done this winter so that work may be commenced promptly on the actual road work in the spring. One of the chief delays in road work this year was due to the fact that much of this work had not been previously done. In connection with the surveying, etc., the department is preparing sets of instruction on the different methods of road building to be employed so that road construction contractors may this winter know the specifications and the road upon which bids are to be made. With this preliminary work done there will be a great opportunity for road contractors, it is stated by the highway commission, and so far there has been more work than there were contractors to take charge of it. With this preliminary winter work it is planned that practically all the 2,700 miles mapped out for the coming season can be completed before fall.

Plans for Ocean to Ocean Highway.

Los Angeles, Cal.—Here are some of the things accomplished by the good roads boosters, who met in the interests of the promotion of the ocean-to-ocean highway plan: Guaranteed \$5,000 for immediate use in prosecuting surveys, doing temporary work, and making the road from Los Angeles to Phoenix passable. Arranged to raise \$100,000 for the building of a good auto road between Banning and Yuma, as well as to carry on necessary work in Arizona from Yuma to Phoenix. This fund is in addition to smaller amounts already either pledged or paid in by smaller communities and individuals, and is also in addition to large contributions of rights of way and materials on the line. Started a movement, to which Supervisor S. A. Butler pledged his active aid, for a 10-cent road tax in this county, made under a special provision and to be devoted to the construction of permanent roads in the county. This will raise something like \$100,000 a year, which is in addition to all present county and district road funds. Organized effectively for work on actual road construction and laid plans for carrying the project forward to completion, with assistance from both states in all the counties through which the road passes and all the towns, cities and communities which will be directly benefited by the road.

The first formal meeting of the committee of one hundred citizens, of which John S. Mitchell is chairman and J. J. Jenkins, secretary, organized to push to realization the dream of a high grade thoroughfare connecting Phoenix, Ariz., and this city, and binding the new State to Southern California for the best interests of both, met in the Chamber of Commerce with a large representation present, and set the ball to rolling in a most vigorous and promising way, as indicated in the list of accomplishments enumerated above. Business and financial institutions with a combined capital of \$100,000,000 were immediately represented at the meeting. Engineer C. H. Bigelow, chief of the technical force of this division of the ocean-to-ocean highway movement, reported that surveys are being pushed and that a small amount of money expended judiciously will make the road between here and Phoenix passable in thirty days. Meantime the men of the committee have guaranteed \$5,000 and Engineer Bigelow will start immediately with further improvement and survey work—held up heretofore because of lack of funds.

Markers for State Highway.

Hannibal, Mo.—The official marker of the Missouri cross-state highway has been adopted by the executive committee at Shelbina. It is a black metal sign, 10x18 inches in dimensions, with a white cross in the center. The wording "H. and St. Joe highway" appears on it. The committee decided that the highway should be marked immediately and 500 metal signs will be ordered to be placed along the 208 miles between Hannibal and St. Joseph. The route is directly across the state. Markers will be placed on an average of three to a mile and telephone poles along the route will bear a black band with white cross in the center. An official inspection will be held October 15-16th. Representatives from the ten counties through which the highway passes declare farmers are taking great interest.

New Plan Proposed for Marking Roads.

Des Moines, Ia.—The consent of the board of supervisors is now all that is needed to line the River-to-River road and other organized highways with a system of sign boards for the direction of travelers. It is an advertising proposition advanced by G. F. Balliet. He offers to establish at convenient points on all main roads signs telling the distance to various towns and cities and giving directions at uncertain intersections of highways, without cost to the county. The supervisors placed the matter in the hands of their attorneys that the jurisdiction of the board might be ascertained. According to Balliet's plan, the signs will be five feet above the ground, securely fastened on cement posts. Underneath the "So many miles to Des Moines" advertisements of Des Moines business houses will be displayed. The signs will be paid for in this manner. The board considers the proposition one of benefit to Des Moines and Polk county and will pass the required resolution in all probability, if there is no legal preventive.

Lay Lath Between Bricks in Street.

Spokane, Wash.—The city will make an experiment on a new way of laying brick pavements on grades in order to meet the objections of the Spokane Horseowners' Association to the way brick has been laid in the past. Bernard street, Seventh to Eighth avenue, being paved with brick by Mitchell Brothers for the property owners, will be the block on which the experiment will be made. In laying the brick on this grade the city will have the contractor lay a lath between each two rows of brick, separating them three-eighths of an inch, which may make the paving more noisy, but the horseowners think will furnish a better footing for horses. The cement between the bricks will not be allowed to come to the surface of the street, as has been the practice in the past. The horseowners' association has volunteered to pay the extra cost, if any, of trying the plan on Bernard street. The city commissioners will look at the street and procure the agreement from the association before finally ordering the change.

SEWERAGE AND SANITATION

Champion Fly Swatter.

Redlands, Cal.—A. E. Chapman, the municipal fly catcher, has filed his report showing that between September 1st and September 24th he has killed approximately 3,750,000 flies. He has emptied 50 gallons of flies from 100 traps scattered through the business portion of Redlands. Chapman estimates that there are 75,000 flies in a gallon.

Big Sewer Is Completed.

Belleville, Mo.—The big east side sewer system has been completed in Belleville, finishing the sewerage of the entire eastern part of the city. The sewer, which is five miles in length and costs about \$70,000, will connect with a septic tank, which will dispose of the sewerage of McKenzie place, Oakland addition and Washington place.

Tramps Dig a City Sewer.

Marysville, Ky.—A sight never before witnessed in Marysville was the building of a sewer by hoboes. For some time past a sewer has been in contemplation on Lee street, and after the arrest of the twenty or more tramps near the city they were fined \$15.50 each, and not having any money, they were placed at work digging the sewer ditch.

Health Board Relaxes Vigilance Against Rats.

Jacksonville, Fla.—The city health department has ceased its vigilance against the rat, the department having examined over 1,500 specimens without finding a single rat that contained any evidence of containing the germ fostering the bubonic plague. The health board has been paying five cents each for all rats, dead or alive, delivered at its offices. The board especially urges that the citizens of Jacksonville do not relax their efforts in trapping the vermin and continue to capture all the rats possible, as it is recognized that they may become a danger to the health of the community at any time.

Mayor Asks Aid of Militia.

Manchester, O.—Permission to call out Company L, First Regiment, O. N. G., to enforce a quarantine against diphtheria, has been asked of the adjutant general's office by the mayor of Manchester. In a conversation with the adjutant general's department the mayor said members of families having cases would not remain indoors, and he desired to use the militia to compel them to do so. The mayor was referred to the county commissioners and told that if they could not handle the situation the soldiers would be given him. There are more than thirty cases of diphtheria in Manchester.

WATER SUPPLY

Construct New Reservoir.

Fort Dodge, Ia.—A new city reservoir is being built on Duck Island. The reinforced-concrete walls of the big basin are sloping. The smallest diameter will be 162 feet and 222 feet at the largest diameter. The roof is to be made of cement. As the bottom of the reservoir is above the normal level of the river and the walls rise eight feet above the surface of the ground, no danger of the river's rising until water flows into the reservoir is expected. An arrangement has been designed to take the water to the reservoir from the city wells and then back again to the pump by gravity.

Amsterdam City Water Inspected.

Amsterdam, N. Y.—The members of the Amsterdam common council have made an inspection of the headquarters of the Amsterdam water supply, with the idea of making certain improvements which have been advocated by Commissioner of Public Works Dwyer and the members of the public works committee. The trip was made with the view of bringing the condition of affairs at Glen Wild to the attention of the aldermen, who are not acquainted with the repairs and improvements looked upon

as a necessity. The public works department fund is running low and some of the aldermen are averse to any work at the headquarters of the system unless absolutely necessary. It is desired to clean the gate house dam of the muck and filth which has accumulated. It is further desired that screens be placed in front of the pipe line at the gate house instead of wooden racks.

Water Works Nearly Finished.

Hiawatha, Kan.—The new water works system for the city of Hiawatha is nearing completion. Last spring the city purchased the Meisenheimer spring for \$2,500 and voted bonds in the amount of \$28,000 to put in the system.

Water War Settled.

Anniston, Ala.—The war between the Anniston water supply company and the city of Anniston with reference to water furnished to the public buildings owned by the city has been amicably settled, and the meters which were taken out of some of the buildings will be restored.

New Storage Basin Ready Soon.

Dallas, Tex.—Within the course of the next thirty days the city of Dallas will have another surplus water storage basin with an estimated capacity of 400,000,000 gallons. This additional supply will be obtained by the construction of a dam 110 feet in length and 18 feet in height across the Elm fork of the Trinity river at a point twenty-three miles distant from Dallas and three and one-half miles from the town of Carrollton. The approximate cost of the dam is \$23,000, and work on it was begun last spring. The contractors expected to have completed the dam before September 15th, but owing to several delays caused by heavy rains and high water, the job is not yet finished. Favorable weather permitting, the dam will be completed within the next three or four weeks.

Anniston Warring on Water Supply Company.

Anniston, Ala.—The city of Anniston is again engaged in a water war, and this time the other belligerent party is the Anniston Water Supply Company, the fight growing out of a difference between Mayor J. L. Wikle and H. B. Rudisill, general manager of the water company, as to the amount of the city's bill. According to the contract entered into between the city and the water supply company, the city was to receive its water free at all public buildings. The mayor claims that the city hall comprises three buildings and that the city should receive water free in each of these buildings. Growing out of the dispute meters have been removed from two of the fire stations, and the city has connected direct, one of the employees of the water company having been arrested; and while no case has been made against the employee, it is possible that the dispute will be taken into the courts. "As long as water runs through the mains of the city water company, so long will the public buildings draw water from them," says Mayor Wikle.

Complete Work on Filter Plant.

Fort Smith, Ark.—Fort Smith's new pump house, the latest addition to the city's new water works system that is being installed at the mouth of Mill creek and Poteau, is rapidly nearing completion. The pump house is being built just south of the one in use now and when completed will be one of the most up to date in the southwest. Work was started on excavating for foundation six weeks ago but has been delayed on account of the solid, fine grained rock that had to be blown out. This rock has no seams in it, making it almost impossible to dig out. Several hundred pounds of dynamite have been used in blowing out the rock. However, this hard rock will make an ideal foundation for the pumps to rest upon. The pump house, when completed, will be much larger and better equipped than the present one, room being made for three separate pumps. However, only two of the pumps will be installed, room being left for another for future needs. The building will be of brick and judging from the plans and specifications, will be a very handsome structure. The pumps will be of Worthington, Centrifugal type and of latest improved pattern.

Rebuild Water Softening Plant.

Oberlin, O.—Mr. W. F. Schickler, superintendent of the Oberlin municipal water works plant, says they are rebuilding their water softening plant, and expect to complete it in a couple of months, when they will probably purchase a new pump. They are considering the possibility of using electric power which the Ohio Gas & Electric Co. would furnish. The plant has been making enough money to take care of its indebtedness, and has accumulated about \$15,000. It has 1,000 live services, of which 80 per cent. are metered.

Will Install Filtration Plant.

Wheeling, W. Va.—Contracts have been let for a pumping station on Mozart Hill, which will take water out of a 20-inch main and pump to two tanks. The pump will operate by electricity furnished by the Consumers Electric Co. After about three years' discussion, the Board of Control has finally recommended to council to install a mechanical filtration plant, to be erected alongside of the present power station, and to cost \$450,000. A bond issue has been asked for to cover the outlay, and opposition has developed in favor of wells, which is holding the matter up at present.

Aerate Artesian Well Water.

Perth Amboy, N. J.—Aeration of artesian well water will soon be started at the city water works at Runyon. A new aeration plant, which has been under construction for the past few months, is nearing completion. The supply of water to be received from it, coupled with the constantly increasing supply from ground storage wells will give the city enough water to supply all demands, it is declared. Improvements are going on at a rapid rate at the water works. There is an ample supply of water on hand and despite this fact the supply is constantly being increased. Most of the old wells are being repaired so as to increase the yield and new wells are being constructed by John Pfeiffer, Jr., a contractor, and by city workmen, by means of well-driving apparatus recently purchased by the city. Mr. Pfeiffer has yet to sink five wells with gravel screens to complete his contract. The city proposes to sink and equip eight wells with wire screens by means of its own apparatus. Superintendent Crowell and other officials of the water department were surprised to find that the yield of one well increased to enormous proportions after it had been fitted with a new screen. As a result a new well was constructed nearby and the yield from that was exceptional. Thus, by means of its new well apparatus, the department can repair wells and determine approximately the amount of water to be derived from the ground in various locations.

Seek Water Free From Alkali.

Phoenix, Ariz.—If City Water Superintendent V. A. Thompson is successful in his quest for a better water supply for the city of Phoenix, it will mean that not alone will purer water be introduced into the mains, but that the Southern Pacific will abandon its plans to construct a water plant some miles outside the city, and that one of the largest breweries in the southwest will find place in Phoenix. That he will secure the required grade of water, Superintendent Thompson is quite confident. To the end that the new supply of water may be obtained, there is now in the course of drilling a sixteen-inch well, located at the city water pumping plant. This well has already been driven to a depth of about two hundred and seventy feet and Thompson intends to go down at least five hundred feet and even further before abandoning his search at that point. When the work of sinking the new well was undertaken, it was not very long before a flow of water was encountered. This water seemed to differ but little from that now in use by the city. Alkali was present in large quantities, as were also organic salts to an unusual extent. The driving of the casing was continued and later another flow of water was struck. This water seemed a trifle better, but was still unsuited for the purposes Thompson had in mind. The city is now supplied from a series of wells located at the pumping plant but none of these were sunk to any very

great depth. The water, being laden with alkali has ever been the bane of a housewife, who could do no washing without the use of large quantities of soap or washing powders. In the teakettles it was found that heavy deposits of the alkali were to be found and there are many people who find that they are unable to drink the water, although hundreds of others claim that it is excellent drinking water. It is known that but a few miles outside of Phoenix excellent, soft water can be struck without going to any very great depth. Superintendent Thompson believes that he can encounter this flow if he goes deep enough. Should he succeed in finding the kind of water in which he is of search he will cause two other wells to be drilled and these, he says, should be sufficient to supply the entire needs of the city, as well as those of the Southern Pacific. An interesting side light on the drilling operations is the finding of small gold deposits by boys who are watching the big drill at work and who invariably pan every bit of the sand and dirt that is brought up by the drill. They frequently secure from two to three dollars' worth of gold as a result of a day's search.

STREET LIGHTING AND POWER

More Power for Hallettsville.

Hallettsville, Tex.—The city council has purchased a new boiler for the water and light plant. This became necessary on account of the increase in the number of lights used and also the necessity of greater water pressure. With the old boiler only sixty pounds pressure could be used, while the new boiler will stand 150 pounds pressure. The new boiler will be installed in about three weeks and will be of benefit to the city in many ways.

Public Improvements Contemplated.

Three Rivers, Mich.—Mr. Charles Londick, superintendent of the water works, states that they have had a preliminary estimate made on new water works and street lighting system. Heretofore the Constantine Hydraulic Co. has been supplying their street lights, commercial lighting, etc. The figures now being made contemplate street lighting and a new water works plant, including a new building, pumping station and lighting station; it will also include new city offices and council chamber. The preliminary estimate is \$73,000. The law requires the election of the commission at the next regular election to revise the charter, in order to permit the necessary bond issue, which in all probability will go through. A year from this fall the street lighting contract expires, at which time they want to be ready to light their own streets, and have purchased additional water power.

More Street Lights at Clarendon.

Clarendon, Tex.—The Clarendon Electric Light and Power Company has in operation throughout the business section a system of beautiful white lights, giving Clarendon a great white way. Eighty-four additional street lights are being installed, which will make Clarendon the most completely illuminated city in the Panhandle. Power lines are being extended beyond the city limits to accommodate the demand of the farmers for lights and power.

La Grande Will Blaze With Cluster Lights.

La Grande, Ore.—La Grande is to enter the metropolitan class in the way of lights. Although she has enjoyed the distinction for some time of being the best lighted city of her size in the state of Oregon, having now in use many streamers of lights suspended across the business section of the city, a plan has been made which culminated at the last Council meeting in the ordering of sufficient cluster pole lights to supplant the strings of incandescent lights and the arc lights now in use. The clusters for the present will be mounted on the poles now in use for suspending the "stringers." They will be painted white. The poles will shortly give way to ornamental iron posts of colonial effect. The cluster lights will give the city more light at less expense than the present system.

Cluster Lights in Forest Grove.

Forest Grove, Ore.—Cluster lights are being placed on Main street. The lights are duplicates of the cluster lights in Portland. The city supplies the electricity free to any of the property-owners who will erect the posts and install the lights.

New Lights for Square.

Olneyville, R. I.—It is planned to install a cluster of magnetite lights in the center of Olneyville square at the junction of Broadway and Westminster street and another cluster near the junction of Hartford avenue and Plainfield street. In addition to this, there will be numerous "single" lamps spread over the stretch between the two points, some being on the north side of the highway and an equal number on the south. If it is found that even then the business center is not satisfactorily lighted additional lights may be put in. The lighting of the business center has not been satisfactory and in addition to individual complaints the Olneyville Business Men's Association considered the issue many times. Committees were appointed and the question was taken up with officials at city hall, but no improvement was made. The committee on lights has visited Olneyville square at night on several occasions and has decided that it should be better illuminated.

FIRE AND POLICE

Tuckahoe Holds Annual Fire Inspection.

Tuckahoe, N. Y.—The Tuckahoe Fire Department held its annual inspection in conjunction with the Bronxville department and the new auto engine of the Tuckahoe department was shown the public for the first time. The money for the machine was authorized at the election last fall.

Offers Prize for City Firemen.

Philadelphia, Pa.—Mrs. Muckle, wife of Colonel John Muckle, has repeated her offer of some time ago to present annually for five years a silver cup to the Philadelphia fire company having the highest average in a "first-aid-to-the-injured" contest, and rules were drawn up governing the contest.

Fire Department Studies.

Bluffton, Ind.—Members of the city fire department under the leadership of Chief Arthur Hurd have begun a systematic study of the geography of the city and the floor plans of the factories and other semi-public buildings. Interior arrangements and details of construction will be given close attention.

Fire Department Inspection.

St. Louis, Mo.—The inspection of buildings by members of fire departments, at their leisure, in order to determine the best plans for fighting fire, should any break out in the building, was one of the principal topics discussed at the convention of the International Association of Fire Engineers at Denver, Colo. H. C. Henley, chief inspector of the St. Louis Fire Prevention Bureau, and James T. O'Donnell, chief of the Underwriters' Salvage Corps, were among the St. Louisans who attended. The fire chiefs of many cities gave their experience with such inspections, and the system introduced into the St. Louis department by Chief Charles E. Swingley was explained by Henley, who exhibited the blank used in such inspections in St. Louis. "The advantage of such inspections is that they are made during times of calm," said Henley. "The system follows the sound precept, 'In times of peace, prepare for war.' The inspections are made by the captains of hook and ladder companies in the districts in which they are charged with fighting fires. With the information resulting from the inspection, the captain is able to lead his men to the exact spot from which the fire can be fought to the best advantage with the greatest safety to the firemen. The captains are required to fill out the blanks, not for reference at the fire, but to prove to the chief that the inspection has been made. The information sticks in the mind of the captain, and he uses it auto-

matically when fire breaks out. The inspector is required to locate the stairways, the elevators, the scuttles leading to the roof, the standpipes, the switches for turning off the electricity in the building, the sewer openings in the basement, the nearest fire plug, the nearest fire-alarm box and to fix the location in his mind by writing it down on paper. When the blank is filled out, the captain is required to obtain the signature at the bottom of the blank of the tenant of the building. This attests the fact of the inspection and its accuracy. The blank is then sent to Chief Swingley. The inspection has the additional advantage that if flagrant violations of fire-prevention safeguards are found they can be remedied at once. Most persons are anxious to take proper precautions against fire, and will remedy defects when they are pointed out.

Bertillon System to Be Centralized.

Des Moines, Ia.—A central bureau of identification of criminals by the finger print method in each state was urged by C. C. McClaughry, warden of the Anamosa reformatory, in an address at the conference of the state institutional officials and members of the Iowa board of control at Des Moines. He recommended that the next legislature be asked to create such a bureau in Iowa.

Oakland Police to Learn Athenian Oath.

Oakland, Cal.—By order of Walter Petersen, the new chief of police, officers under him are busy learning by heart the Athenian oath. In assuming office, Chief Petersen said: "I wish to read to you the Athenian oath. I would suggest that each one of you learn it by heart; you will profit by it. It reads: 'We will never bring disgrace to this, our city, by any act of dishonesty or cowardice, nor ever desert our suffering comrades in the ranks; we will fight for the ideal and sacred things of the city, both alone and with many; we will revere and obey the city's laws and do our best to incite a like respect and reverence in those above-us who are prone to set them at naught; we will strive unceasingly to quicken the public's sense of civic duty. Thus in all ways we will transmit this city not less, but greater, better and more beautiful than it was transmitted to us.'"

A Lesson in Fire Safety.

New York, N. Y.—Fire Commissioner Joseph Johnson has planned to celebrate "Fire Prevention Day" on October 9th in New York by a fire drill in one of the largest factories in the city, on Twenty-fourth street, where fire prevention and safety devices have been installed. This is a building in which 2,500 persons are employed, most of them women. The factory has a regular fire-fighting organization of its own, with a chief, officers and firemen. The building is equipped with safety exits, fireproof stairways and automatic sprinklers. Mayor Gaynor has been invited to see the factory fire department drill. Representatives of the Board of Fire Underwriters and the members of the Cloak, Suit and Shirt Manufacturers' organization have also been asked to attend.

Arcades Opposed by the Fire Department.

Portland, Ore.—Construction of arcades over the sidewalks of the big business buildings is being fought by the fire department, and an ordinance limiting them in size will be submitted to the council. It provides that no arcade or awning over a sidewalk of a building shall exceed 20 per cent. of the street frontage of the structure. Firemen assert that the construction of arcades over the sidewalks of buildings hamper the work of firemen by reason of the fact that they are unable to place ladders to the windows of buildings, and if a big fire should happen in any of the large business blocks, it would be impossible to operate the lifenet in case any of the occupants of the burning building were unable to reach a fire escape or a stairway. If a person should jump from the building they would fall upon the arcade or awning and the life would be crushed out of them. By limiting the size of the arcades, the firemen assert that they will be enabled to operate their ladders and lifenets without hindrance and thus might be able to save many lives which were endangered. The measure has met with the approval of the street committee, and it is said that it will pass without a dissenting vote.

MOTOR VEHICLES

Police Auto-Patrol Ready for Delivery.

Erie, Pa.—The new police auto ambulance-patrol has been reported at the City Hall as ready for delivery to the city from the Keystone Carriage Works, where the chassis has been for months while the body was being constructed. The builders say the machine is now ready for delivery, except installing the heavy gong with which the car will be fitted. The Mayor has ordered Chief Detzel to put the machine in commission at once on its being accepted by the city. This will be done without waiting for completion of the municipal garage which has been authorized on the city's property at Seventh and Peach streets, opposite the Police Headquarters.

New Auto Truck for Altoona.

Altoona, Pa.—The new combination auto chemical engine and hose wagon purchased for the use of the Altoona Fire Department has arrived from the plant at Springfield, Mass. It has been temporarily installed at No. 4 station, but will be located permanently at No. 1 station, on Tenth avenue. That the new piece of equipment will prove a valuable addition to the department is already indicated. It had been feared by some of the Councilmen that it would be unable to mount the hills. Despite the fact that other trucks negotiate these same hills, the fear got abroad that it would be impossible for a piece of automobile fire apparatus to do it. That fear was laid at rest when, with thirteen men on board, the new auto truck with ease ascended the hills on each side of Twelfth street. Several of the firm's machinists are in Altoona and will teach the local firemen how to run the machine.

Test Auto Garbage Trucks.

New York, N. Y.—The department of street cleaning is experimenting with motor trucks to replace the horse-drawn carts in the collection of ashes, garbage and refuse. Each of the trucks will carry nine cubic yards. This is equivalent to six ordinary cartloads. The men needed for each auto will be a chauffeur and three loaders. No time will be saved, it is expected, in the loading, but in the hauling, dumping and return to the truck's district it is believed that there will be a saving of two-thirds of the time now spent in these processes. At present the department officials figure that 57 per cent. of the day is taken up in loading the carts and 43 per cent. in traveling to and from the dump. The daily expense of operating a truck will be, it is estimated, \$20, while each cart now costs \$4.65. This works out at a saving of \$12.55 on each day's work that a truck can do, as compared with what it now costs by cart. Both garbage and ashes would be collected in the same truck, although they would be kept separate in the vehicle. The budget committee will consider the advisability of purchasing some of these collection trucks.

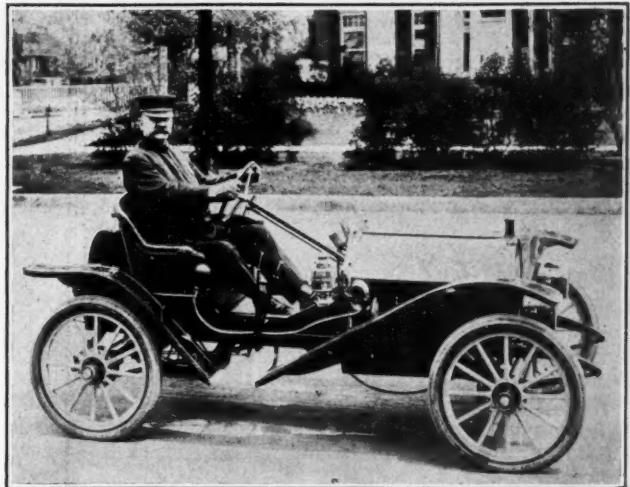
Auto Apparatus for Fairhaven.

Fairhaven, Mass.—It is expected that the new chemical wagon, ordered through the sanction of the last town meeting, will be placed in service within a few weeks. The vehicle is a Pope Hartford 60-horse-power combination chemical and hose, made unusually effective by being double tanked. The introduction of the new chemical wagon into the department will mean the transfer of the wagons, now in use by the department, and will eliminate altogether the small hand protecting society wagon stationed on Spring street, and will also mean the doing away with the station house in which it is now located. The protecting society wagon has been in service for the past twenty years and now its equipment of rubber blankets, etc., will be removed to the chemical. The transfers will be those of Hose 1 wagon to the north end of the town, Hose No. 2 wagon to take the place of No. 1 and the men now with the No. 2 wagon will be affiliated with the new chemical which will be known as Chemical No. 1. According to Chief Shaw, the Fairhaven machine will look larger than those now in use by the New Bedford department and will be double tanked instead of single tanked,

as are the New Bedford wagons. The latter fact is explained by the presence of outlying water lines in this city, while across the river they have no water lines established in outlying districts.

Police Commissioner Commends Hupmobiles.

Detroit, Mich.—The police department of Detroit has had a number of Hupmobiles in use since the spring of 1910, and Police Commissioner Frank H. Croul states that the motor squad with its Hupmobiles actually saved



HUPMOBILE USED BY DETROIT POLICE.

the city from an epidemic of crime. As a direct result of the test which the department put the car in 1910 the sturdy little machine has since been in constant use by the department. The first Hupmobile to be used was driven by Captain Lindsay, who was at the time he received the car a lieutenant, and in a letter to the vice-president of the Hup Motor Car Company, Mr. Lindsay said that he knew that a car helped him gain his promotion. It has been found a great deal more useful than the motorcycle, as it can travel with greater speed over the road. During its several years of service the Hupmobile has been invaluable in rushing officers to scenes of disturbance. The police commissioner in his annual report said that it was the best investment ever made by the department.

Test Proves Satisfactory.

Niagara Falls, N. Y.—After a thorough test the fire commissioners have accepted the new six-cylinder, 75-horsepower Ahrens-Fox automobile fire engine. The engine is now in service at fire headquarters. The new engine was taken to the state reservation in the rear of the Cataract House, where it pumped 785 gallons of water per minute and threw an inch and three-quarters stream 260 feet high. Hose was then attached to a plug at Main street and Buffalo avenue, and 889 gallons per minute was pumped. An inch and a half stream was thrown 290 feet. Then lead by Chief Utz in his automobile, and followed in order by Commissioner Isaacs, the new auto engine, the new chemical auto, and city officials bringing up the rear in another automobile, the speed laws were violated in a race to the north end. The apparatus was driven at 38 miles an hour going down Main street. At Niagara avenue and Main street another coupling was made and the engine started to work. When it reached a pressure of 270 pounds the coupling plug gave way. The shower drenched a crowd of onlookers, and Plumbing Inspector Ralph Erskine and John Rohleder, who was assisting him, were knocked back about fifteen feet. Then 1,000 feet of hose was laid and a stream was thrown 175 feet. The real test was made when the engine was again brought back to the south end, and an inch and three-quarters stream thrown high over St. Mary's church steeple. The steeple is 175 feet high. Fire Chief Cunningham, who was on an elevation a distance from the church, claims that

the stream went at least 35 feet higher than the steeple. The trip was then made to fire headquarters, where the commissioners congratulated Vice-President John P. Ahrens on the magnificent showing, and immediately accepted the apparatus on the showing made, which exceeded the guaranteed capacity.

Sharon Purchases Auto Truck.

Sharon, Pa.—At a recent meeting of the City Council Chairman Bell of the special auto fire truck committee recommended the purchase of a Robinson truck. Councilman Allen demurred, using the argument that the streets of the city were not in shape for an auto truck. Councilman Alderman spoke of the conditions in the Fire Department, referring to the scarcity of horses and the advanced age of the horses at present in service; declared that it had been demonstrated to the committee that an auto fire truck could traverse streets that were even impossible for a three-horse hitch; that an engine was badly needed in the hill districts to increase the water pressures in case of fires; that the installation of sub-stations on the hills would not remedy the conditions in regard to water pressure, and that the only remedy seemed to be either the purchase of a fire engine and additional horses for the Fire Department or an auto fire truck. He believed the truck to be the most economical, declaring that without a doubt maintenance cost of the department would be greatly reduced. Mr. Alderman then moved that a Robinson "Jumbo" auto fire truck be purchased and the motion was carried.

GOVERNMENT AND FINANCE

Defeat Commission Plan.

Atchison, Kan.—The proposition to adopt the commission form of government for Atchison was defeated by a majority of 153.

Adopt Commission Form of Government.

Jackson, Miss.—At a recent election held in Jackson voters decided to adopt the commission form of city government, 760 to 214. Another election will be ordered for the purpose of electing commissioners and the change of municipal methods will become effective Jan. 1, 1913.

City Gets Small Profit from Dock.

Tacoma, Wash.—The monthly report of Mayor W. W. Seymour for the work done by the department of health and sanitation during August has been filed with the city clerk. The figures of the report on the Municipal dock show that a gross profit of only \$24 was made during the month, but as the checks from the government and the Tacoma-Seattle-Everett route had not been received on the first of the month the results shown are deceiving, the mayor said. The transportation company pays \$375 monthly for the use of the dock and the government pays \$300 a month for its quarters. The city dock at 15th street shows a big profit, as the cost of operation there is small. The dock took in \$632 and the expenses were but \$80.

City Saves \$5,000 on Telephone Bill.

Baltimore, Md.—Through the system adopted by the City Comptroller's Department to collect for all telephone calls made by municipal departments supported by special funds or loans, Baltimore's telephone bill for 1912 will be just \$5,000 below the estimate figure, which was \$20,358. The saving is the result of the determined efforts on the part of the Comptroller's Department to make the Paving Commission, the Sewerage Commission, the Water Department, the Park Board and the other departments supported by special funds and loans pay in full for each telephone call made from their respective offices. Personal calls from other departments have also been zealously followed up and the person making the call made to pay the full rate for the call, at the first of each month. In former years many personal calls were made, many of which were long distance, which were paid for by the city without an attempt to levy the charge for the call on the caller.

STREET CLEANING AND REFUSE DISPOSAL

Clean-up Day Set.

Louisville, Ky.—Governor McCreary has issued a proclamation setting apart October 8 as "clean-up day" in Kentucky. He asks that all citizens, on that day, give attention to the removal of rubbish on their premises. Lack of attention in this particular he says frequently gives rise to fires listed annually in Kentucky and attributed to spontaneous combustion.

Street Sweeper Demonstrated.

Newburgh, N. Y.—Broadway and Colden and Water streets received a cleaning one evening last week with a Studebaker Pneumatic Flusher, which the Studebaker Corporation sent to the city for demonstrating purposes. Members of the City Council, Street Superintendent Brooker and others who witnessed the experiment were favorably impressed and it is not unlikely that the city will purchase a flusher for street cleaning purposes. The machine is unquestionably more thorough and sanitary than the methods now used in cleaning the business streets. The machine, which was operated under the direction of W. K. Graves, from the Studebaker Co., attracted considerable attention. It resembles an ordinary sprinkling wagon, although much larger. A large tank, with a capacity of 600 gallons of water, is filled from a hydrant, the water pressure forcing the air into a compartment in the interior of the tank. After the tank is filled the water is allowed to run out of the apparatus and the tank is refilled, the pressure being augmented as a result of the second filling. The apparatus is then ready for use. On either side of the wagon, between the front and rear wheels, is a discharge nozzle. These nozzles are worked by foot levers on the driver's seat and either or both can be operated at once. The water is sent out from these nozzles, which are about a foot from the ground, and sent skimming over the roadbed. If the full force of the spray is shot out it will flush a street at least 35 feet in width thoroughly, less water being used and quicker results obtained than with a hose or sprinkling cart.

City's Prisoners Exterminate Weeds.

Leavenworth, Kan.—Early in the summer when the police department started to rid the city of vagrants, it was decided that the best way to get value received from those who were committed to the city jail was to make them work for their board and lodging in helping to rid the city of weeds. So nearly every day this summer when there were enough able-bodied men to form a suitable force, a small army of men armed with scythes and other instruments, marched out of the city prison in the morning and spent the day in various parts of the city, and under the direction of Jailer Lonergan great inroads were made on the weed growth. This winter it is planned to work the prisoners on the street, shoveling snow and cleaning crossings.

San Antonio Soon Will Be Known as a Dustless City.

San Antonio, Tex.—For many years the people have wished the streets oiled; now their wish is being gratified. If the use of oil on the streets can give relief from dust San Antonio soon will be a dustless city. The streets are now being sprinkled with crude petroleum and soon will be hard and clean. San Antonio has been dusty only since, as in many other cities, the automobiles have ground the surface of macadam and dirt roads into fine particles. Mayor Jones and his advisers are of the opinion that the metropolis of Texas has plenty of money and abundant credit, and that any experiment likely to rid the city of dust will be worth the cost. The present administration has no hesitancy in spending all the money necessary to improve the city, and various projects are being considered. But first is the thorough oiling of the streets. During the last few months oil has been placed on many of the county roads adjacent to San Antonio and not only has the dust been suppressed, but the roads have been made smooth and firm.

RAPID TRANSIT

Gets City Subway Plans.

Chicago, Ill.—Plans for Chicago's proposed subway system have been completed and presented by a subcommittee to the city council on subways. The plans provide for four main lines traversing the city. The estimate for constructions is \$96,257,000 and for equipment \$34,884,000. The system would have a capacity of 187,000 seats per hour.

Ground Broken for Municipal Railroad.

Los Angeles, Cal.—Work is now in progress on the Los Angeles municipal railroad to the harbor.

Mayor Alexander turned the first shovelful of earth on the right-of-way at Manchester avenue and the city limits, formally beginning the work.

The step taken was to save the city the rights of way for the proposed harbor railroad, options of which will expire soon unless work on the property is actually begun.

Soon after the mayor had broken the ground, graders and scrapers from the street department were set to work on the place and actual grading was begun.

MISCELLANEOUS

Slot Machines for Cleanliness.

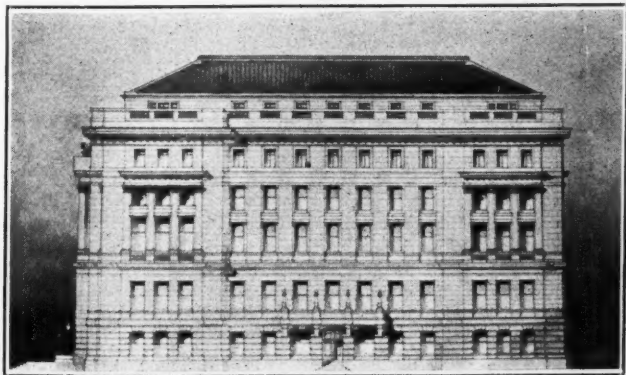
St. Louis, Mo.—St. Louis is attracting the interest of other cities by its plan to supply a cake of soap, two paper towels, and a sanitary cardboard comb, all for one cent. The articles will be sold by means of slot machines operated by the city and placed in public comfort stations and in the picnic grounds in the parks. The towels, soap and comb are wrapped in a cylindrical cardboard box, which drops into the hands of the purchaser. The boxes will be furnished at \$10 a thousand, and a manufacturing concern is to furnish the slot machines free. The city will really make money by this arrangement, because attendants at the comfort stations will no longer be necessary.

Wants Municipal Slaughter House.

Grand Forks, N. D.—Municipal ownership of slaughter houses, barred under the present laws of the state, will become a possibility under a bill which will be proposed for enactment into law at the next session of the state legislature. The movement in Grand Forks for the creation of a sanitary slaughtering place and the abandonment of the old plan of butchering under unclean and unhealthful conditions, is responsible for the movement and several other cities have taken up the question. Grand Forks meat handlers who have interested themselves in the question of securing a new slaughter house to replace the present houses, have not taken any new steps since the meeting with the city council when the question as affecting the local situation was canvassed.

Plan Additions to City Hall.

Providence, R. I.—The picture shows two views of the plans proposed for altering City Hall. The plans for the addition to the City Hall, which have been in course of preparation for some months have been completed and they have been submitted to the committee on city property.



Courtesy Providence Journal.

VIEW FROM WASHINGTON STREET.

The city property committee received an estimate of \$286,510 as the total cost of the improvement. This would include two new elevators. The addition would give 63 per cent. more office room and 47 per cent. more floor space. The contemplated addition includes the tearing down of everything above the main cornice line of the present building, and the raising and completion of the fourth floor and the addition of an entire new fifth story. Both these floors would be made to correspond with and would have exactly the same floor space as have the other floors of the building at the present time. The plans provide for a roof



Courtesy Providence Journal.

VIEW FROM EXCHANGE PLACE.

finish which is almost a duplicate of the top of the Post Office building. They have been drawn so intentionally in order that the two large buildings at the extreme ends of the square might harmonize as much as possible in general appearance. Councilman Arthur W. Fairchild, chairman of the committee, stated that the reconstructed building would give space sufficient to house the school offices under the City Hall roof. This would give the Classical high school, where the office of the secretary of the school committee is now located, several additional rooms for school purposes and would relieve the city of the necessity of building an administration building for the school department.

Hatpin Danger is Solved.

Hamburg, Germany.—The problem of dangerous hatpins has been solved by the street car company providing conductors with corks. Women wearing dangerous pins have their choice between getting off the car and buying municipal corks for the ends of the pins.

Plans Municipal Cemetery.

Chicago, Ill.—A public cemetery operated at cost, not a "Potter's field," but a beautiful park, attractively equipped, is planned by President Peter Barten, of the board of Cook County. The plan was broached while the board was considering the levying of taxes on the property of a number of wealthy cemetery corporations, hitherto exempt. "Why should these corporations, whose property is listed in some instances in millions, grow wealthy from burying the dead?" demanded President Barten. The county attorney suggested that the county had authority to operate a cemetery, and it was ordered that county employees immediately seek a suitable plot of land. Cleveland, O., according to Mr. Barten, is engaged in a similar project.

City Market Saves Purses.

Des Moines, Ia.—Des Moines householders have saved over \$32,000 this summer by reason of the city market place, according to statistics given out by Market Master Morrison. The city market has been in operation during sixteen weeks of this summer to date. The average weekly sales have been \$10,000, or a total of \$160,000 for the season. Mr. Morrison figures that the consumers save about 20 per cent. by buying on the open market and direct from the grower instead of the grocer, as they were compelled to do before the market place was established. The city market is open three days of each week and the average number of wagons of produce on hand is about 225. Most of the produce is sold by farmers and gardeners, who are driving the hucksters out of business. The average value of each wagon load of produce is \$15.

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Fire Alarm Signal Box Patents.

Gamewell Fire Alarm Telegraph Co. v. Mayor and Council of City of Bayonne, N. J.—The Ruddick patent, No. 553,873, for a noninterference signal apparatus designed to prevent a confusion of signals where two or more fire alarm signal-boxes are pulled at the same time, and which covers a combination of elements for sending successive signals by which when a box is pulled, a signal is withheld from transmission during the period when the line circuit is not clear, but is automatically started and transmitted as soon as the line is clear, was not anticipated and discloses patentable novelty and invention; also held infringed. The Cole patent, No. 553,839, for improvements in noninterference signal apparatus, being for mechanical improvements in the apparatus of the Ruddick patent No. 553,873, held valid and infringed.—United States Circuit Court, 194 F. R., 146.

Sidewalk Assessment—Railroad Property—Validity.

New York Cent. & H. R. R. Co. v. City of Buffalo et al.—Where, under the City Charter of Buffalo, providing that the occupant of premises shall lay sidewalks when ordered, and that, if laid by the city, the expense thereof shall be assessed against the premises, the municipality laid sidewalks around part of a railroad company's right of way, the cost of which was specially assessed against that portion as well as other portions of the railroad company's right of way, the assessment, while invalid as to those portions in front of which no walks were laid, is valid as against the property benefited by the walks.—New York Supreme Court, 135 N. Y. S., 196.

Railway Terminal Commission—Statutory Provisions.

Hanrahan v. Terminal Station Commission of City of Buffalo et al.—Laws 1911, creating a Railway Terminal Station Commission of the city of Buffalo, defining its powers, and authorizing the city to issue bonds for the general purpose of effecting a change of the location of railroad stations and terminals, and a change in the location and grades of streets in order to lessen obstruction of the streets by railroad tracks and to provide adequate terminal and transportation facilities, involving the condemnation and exchange of land by the city, and by section 6 authorizing the Commissioners to agree with any railroad as to the portion of the work to be done by the railroad and by the city, and as to the cost to be paid by each, and providing that the cost and maintenance of structures built on the land owned by any railroad should be paid by such railroad, when considered with the Grade Crossing Act of the city of Buffalo, as amended by Laws 1911 which, by section 2, excludes from the jurisdiction of the Grade Commissioners territory including all railroad terminals, contemplates that the railroads will themselves acquire by purchase or condemnation such land as it is necessary that they should own, and hence does not violate Const. art. 8, § 10, which declares that no city shall give any money or property, or loan its money or credit to or in aid of any corporation, nor incur any indebtedness, except for city purposes.—New York Supreme Court, 136 N. Y. S., 1001.

Sewer Assessment—Notice.

Crawford et al. v. City of Detroit.—Failure of a village council to give notice of its determination to construct a sewer as required by Comp. Laws 1897 cannot be cured by a subsequent resolution of the council of Detroit city, after the village had been annexed by the city, ordering a reassessment; Detroit City Charter, providing that, when any special assessment for sewers shall be vacated by judgment on account of any error or omission in the proceedings, the common council may cause a new special assessment to be made, not authorizing the council to cure jurisdictional defects, such as the one in question.—Supreme Court of Michigan 135 N. W. R., 314.

Sewerage—Failure to Abate Nuisance.

Bieker v. City of Cullman.—Municipal corporations are agencies of the state government, and are not liable for mere neglect of officers or agents, in the absence of statutes fixing and imposing such liability, provided there was no negligence in the selection of such agents; so that a city would not be liable for injuries from its mere failure to abate a nuisance in the bad condition of one of its sewers.—Supreme Court of Alabama, 59 S. R., 625.

Paving Ordinance—Sufficiency.

Garner v. City of Anniston.—A city ordinance, providing that a "street should be paved with bitulithic pavement, vitrified brick, or other approved material," does not comply with the requirements of Code 1907, providing that the initial ordinance in such proceedings shall describe "the general character of the materials to be used," and an assessment proceeding under such ordinance should be abated on objections properly made.—Supreme Court of Alabama, 59 S. R., 655.

Contract of Employment—Action for Breach.

Winter v. Department of Health of City of New York.—Plaintiff, a trained nurse, who had been employed in a hospital for contagious diseases, sued the health department, a quasi municipal corporation created by the charter of the city of New York and empowered to maintain hospitals for contagious diseases and to delegate to certain officers the authority requisite to carry out its general powers and subject to suit in its own name, for breach of her contract of employment and to recover necessary expenses of sickness contracted at the hospital, and alleged that the supervising nurse had told her when hired that nurses were taken care of if they contracted disease, and their salary continued until they were able to work again, and offered proof to establish that she had been lawfully hired as a trained nurse. Held, that the exclusion of a question to the supervising nurse who had hired plaintiff, as to any existing rule or practice of the department in respect to the care and continued salary of nurses when plaintiff was hired, was error.—New York Supreme Court, 135 N. Y. S., 873.

Excavation Contract—Construction.

R. G. Packard Co. vs. City of New York.—A contract for the excavation of a bulkhead, the inner line of which was about 9 feet inshore from an established bulkhead line, and the base of which was to be 15 feet below mean low-water mark with allowance to the contractor for whatever he might excavate within an extra foot in each direction, specified that no payment should be made for excavation beyond those limits, "except where known loose rock is shown in the cross-sections above the top grade of the indicated rock, at a line ten feet westerly of and parallel to the bulkhead line, allowance will be made and paid for to a positive line which is forty-five degrees to the horizontal," and specified, as to "typical sections," that they were given as a guide only and to show approximately what the contractor might expect to encounter in the prosecution of the "work," and represented the "typical sections" as information upon (1) "the existing rock bottom which was the top of the loose rock; (2) the corresponding theoretical sections to be obtained, meaning the so-called nine-foot and fifteen-foot lines; and (3) the corresponding limiting lines to which payment will be made when it is impossible to produce the theoretical sections; and that all material was to be measured by comparison of 'accurate cross sections.'" The points at which the 45-degrees lines should commence could not be ascertained before the work commenced. Held, that the "corresponding theoretical sections" meant the 10-foot and 16-foot lines; that the "typical" cross-sections could not be regarded as the "accurate cross-sections"; that "work" had a double meaning, and, for the purpose of fixing the beginning points of the 45-degree lines, did not begin until the blasting began, when the junctions between the loose rock and the ledge rock became "known," so as to be "indicated" upon the cross-sections made by the city after the work was completed; and that work to such junctions was necessitated and contemplated by the contract.—New York Supreme Court, 137 N. Y. S., 9.

NEWS OF THE SOCIETIES

Calendar of Meetings.

October 9-10.

LEAGUE OF KANSAS MUNICIPALITIES.—Annual Convention, Salina.—Mayor O. H. Stewart, President, Parsons, Kan.; Prof. R. R. Price, Secretary, Lawrence, Kan.

October 16-18.

AMERICAN GAS INSTITUTE.—Annual Meeting, Atlantic City, N. J.—Geo. G. Ramsdell, Secretary, 29 West 39th Street, New York City.

October 23-24.

AMERICAN ASSOCIATION FOR THE PREVENTION OF THE POLLUTION OF RIVERS AND HARBORS.—Annual Convention, Cleveland, O.—H. De B. Parsons, Secretary, 22 William Street, New York City.

November 12-15.

AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.—Annual Convention, Dallas, Tex.—A. Prescott Folwell, Secretary, 50 Union Square, New York.

November 19-22.

AMERICAN CIVIC ASSOCIATION.—Annual Convention, Baltimore, Md.—Richard B. Watrous, Secretary, Union Trust Building, Washington, D. C.

December 3-6.

AMERICAN ROAD BUILDERS' ASSOCIATION.—Ninth Annual Convention, Music Hall, Cincinnati, O.—E. L. Powers, Secretary, 150 Nassau street, New York City.

December 12-18.

NATIONAL ASSOCIATION OF CEMENT USERS.—Annual Convention, Pittsburgh, Pa.—E. L. Humphrey, President, Harrison Building, Philadelphia, Pa.

December.

FIRE EXPOSITION AND INTERNATIONAL CONFERENCE OF FIRE PREVENTION, PROTECTION AND EXTINGUISHMENT.—Madison Square Garden, New York City. A. D. V. Storey, Secretary, 1209 Broadway, New York, N. Y.

American Road Congress.

The Congress held at Atlantic City during the week of September 30-October 5 was the most comprehensive in its scheme that has ever been held in America. The object of the meeting was to bring together for the purpose of exchanging views the people who in organized efforts are working for the improvement of roads, the legislators who must pass the necessary laws to provide the means of constructions, the financiers whose help will be needed to provide the funds, the engineers who desire to exchange their experiences in construction and the practical people who provide the means of carrying out the work, namely, the supply dealers, machinery manufacturers and contrac-

tors. However well posted any individual might be in his own particular branch, he had no difficulty in getting new ideas in the allied branches of the general subject.

Among the visitors, of whom there were 1,600 registered and many more who did not register, were more highway officials of high rank than had ever attended a single road congress before. There were twenty-four members of state highway commissions present. Altogether fifty-six countries, states and provinces participated in the Congress, giving it more official character than any American road meeting has ever had before. The United States government, recognizing this, loaned to the exhibition a more complete set of models than had ever been shown before. These models portrayed the history of road building from the days of the Romans up to the present year.

The program included the reading of a long list of papers covering the whole subject as outlined above.

President L. W. Page called the Road Congress to order at the Monday morning session, and Robert P. Hooper, president of the American Automobile Association, was presiding officer. Mayor Riddle welcomed the visiting delegates on the part of the city, and he was followed by Charles Thaddeus Terry, chairman of the A. A. A. Legislative Board, who delivered an address on "The Making of Automobile Law." The final address of the morning session was delivered by N. P. Hull, of the National Grange of Legislative Committee, who took as his subject "The Farmer and His Road-Using."

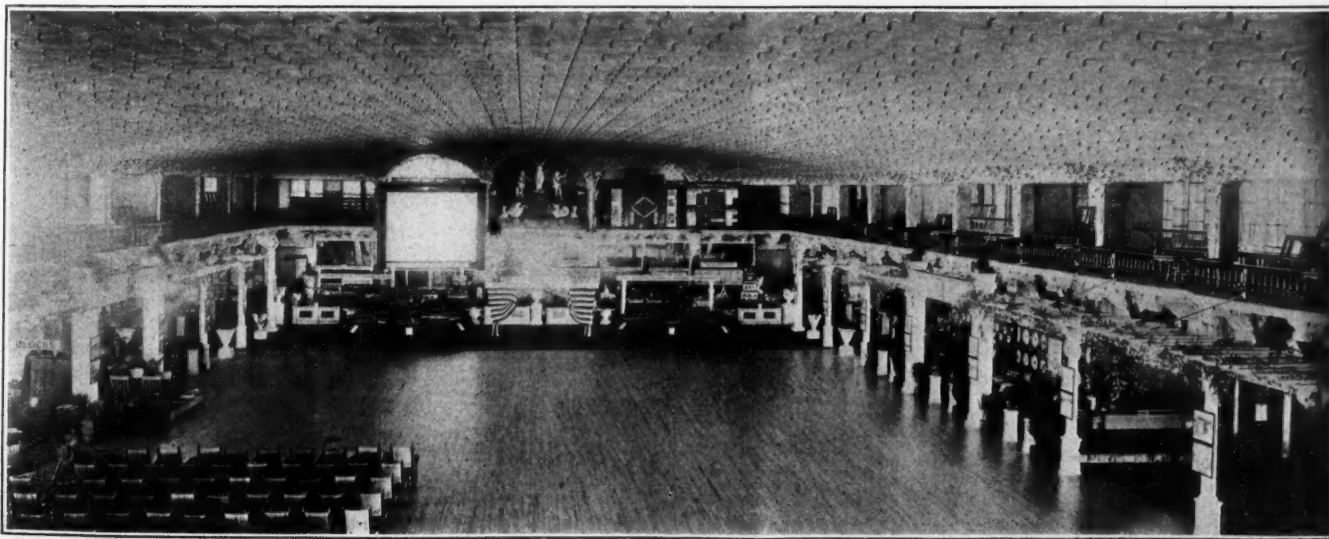
In the afternoon Governor Wilson delivered an address of welcome in behalf of the State of New Jersey. His address was of a scholarly and thoughtful character. He had in mind the relation of highways to the community in both the simplest and most complex stages of its development. The

highway is essentially the portion of the soil which the community retains to itself for purposes of the exchange of information, personal travel and exchange of goods. The logical inference is, in view of the tendency of government to provide more of the things that are needed for the common life, that the government will be obliged in future to give more attention to the matter of highway construction than ever before.

Following Governor Wilson's address Powell Evans, president of the Automobile Club of Philadelphia, delivered an interesting address on "A National System in Marking the Roads"; H. L. Vail, County Commissioner of Cleveland, O., spoke on "Organized Effort vs. Individual Effort"; Senator Walter E. Edge, of Philadelphia, took as his subject "Why New Jersey opened her Gates," and "How to Work for State Aid" was the subject of Joseph H. Weeks, chairman of the Good Roads Committee, Pennsylvania Motor Federation. Mr. Weeks informed his hearers that 8,000 miles of roads are to be built in every section of Pennsylvania, at a cost of \$125,000,000, and that work of the same kind could be done in every State in the Union if the subject was presented to the residents of those States as it had been in Pennsylvania.

The second day's sessions were given over principally to the discussion of various plans actually tried or projected for the construction of highways in certain sections of the country. The establishment of a national highway system was advocated by F. D. Lyon, secretary of the New York Automobile Association.

In outlining his plan the speaker suggested that a cabinet officer be made the head of the new department and that he or his agents go into every State and carry out a campaign of missionary work looking toward the establishment of road departments under certain prescribed rules, to fit the particular needs of the jurisdiction invaded by the adoption of which Federal aid would be forthcoming commensurate with the condition of the roads of that particular State. By the allowance of



MAIN HALL OF MILLION DOLLAR PIER—UNITED STATES GOVERNMENT EXHIBIT IN CENTER.

so much per mile per year from the Federal Government, States already having good road systems would have a surplus after paying for the maintenance of their roads to open up new highways, while those which have bad highways would have the funds necessary for the construction of better highways and in the succeeding years money to maintain them in proper shape, he declared. He then unfolded the scheme of having the head of the suggested national department, or his men, encourage the Legislatures of the States through which it is proposed to establish an ocean-to-ocean highway indicate such roads as will be acceptable for this use. He stated that he had given eighteen years' study to the subject and had come to the conclusion that Federal aid was the proper thing, but wholesale construction of highways by the Federal Government to be folly because of the years that would be consumed in carrying out such a program.

By getting the States interested immediately through a national highway department, and then permitting the government to take over supervision of the roads, through the State highway departments, the work could be expedited, in his opinion.

The third and fourth days' sessions were given to papers on legislation economics and finance and the last two days to the reading and discussion of technical topics.

At the business session resolutions were passed favoring the following plans:

Establishment of a national highway department.

Federal aid in road construction.

Schools in each State for road engineers.

Uniform State laws on road building.

Convict labor on roads.

New thoroughfare from Washington, D. C., to Arlington.

Creation of "Old Trails" ocean-to-ocean highway.

In accordance with a resolution amending the constitution the name of the American Association for Highway Improvement was changed to American Highway Association. The following officers were elected:

President, L. W. Page, director of the United States Office of Public Roads; vice-president, W. W. Finley, president of Southern Railway; secretary, J. E. Pennybacker, Jr., Washington; treasurer, Lee McClung, treasurer of the United States.

Twelve of the States had exhibits. These are New York, New Jersey, Ohio, Illinois, Minnesota, Kansas, Arizona, Montana, Virginia, North Carolina, South Carolina and Tennessee. These exhibits for the most part are photographs and maps, although some of the States have models of the roads which they are building. New York's exhibit is especially full in this particular.

The exhibit of the United States Government attracted by far the greatest attention, however. Its central feature was upon two large

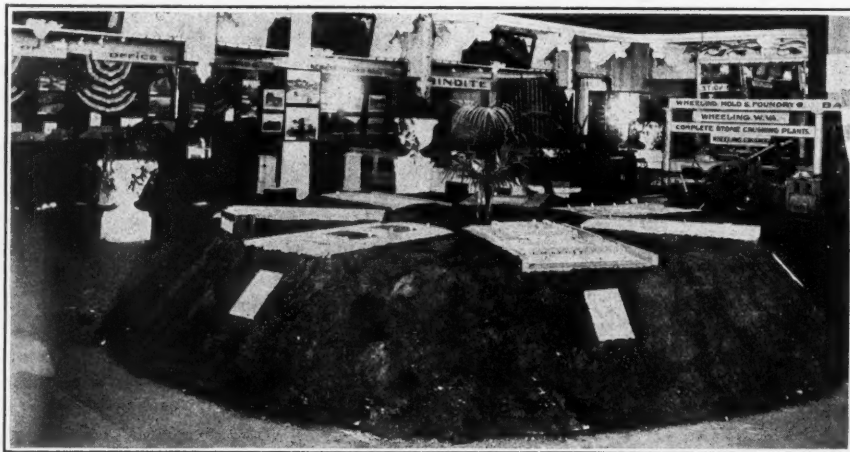
mounds of green in the very centre of the great hall. Upon one of these were models which portray to the eye the whole history of road building from earliest times to the present hour. It begins with the Appian Way, built by Rome in 300 B. C. The French road, prior to 1775, follows. Then comes the French road of the next period, the telford road, the macadam of its inventor, and, finally, modern macadam and the latest bituminous and macadams. As Mr. Eldridge explains, "here are 2,400 years of road building history to be seen at a glance."

On the other mounds are models of all the different types of improved roads which are in use at the present day. These include gravel, sand-clay, waterbound macadam, bituminous macadam, brick and concrete of dif-

"When the route was completed," Mr. Hill was quoted as saying, "our engines could haul twice as many cars over its grades as the locomotives could over the other systems, so that when it came to making rates the heads of the other systems had to come to me."

Mr. Sohier predicted that transportation for long and short hauls would be almost entirely by motor trucks within the next few years, and he cited facts and figures to show that the horse is fast disappearing in such work throughout Massachusetts. Two-horse vehicle travel with heavy loads, he said, had almost entirely disappeared, and there has been a reduction of more than 50 per cent. in one-horse travel for such purposes, while auto travel has increased 112 per cent. in his State.

Colonel Stevens, State Highway



SECTIONS OF ROADS SHOWING EACH STAGE OF CONSTRUCTION.

ferent types. The exhibit also includes models showing the different methods of road drainage, and the proper construction of bridges and culverts.

A few brief abstracts of some of the papers follows:

Colonel William D. Sohier, Massachusetts Highway Commissioner, who presided at the legislative session in the afternoon under the auspices of the American Bar Association, declared that politics must be weeded out of the good roads movement if it is to be a success and that tenure of office was the most important step in this direction. The young men who graduate from the schools of technology, he said, are the greatest asset possessed by Massachusetts in the good roads work going on within that State. Ten per cent. of all amounts appropriated for road construction; he said, should be set aside for engineering purposes, and no additional money should be spent until the engineering department had completely worked out its scheme. As an instance of the wisdom of this course he cited a conversation he had with James J. Hill, the railway magnate, in which Mr. Hill had told him that he had spent five years in working out a route through the Rockies in an ocean-to-ocean railway route, while the route was actually built in two years.

Commissioner of New Jersey, in his introductory address, referred to his brief experience of two years as head of the highway department in the State. When the building of a road between certain points is under consideration, he said, the question often arises as to the cost of road that will be justified by the anticipated benefits of construction. Roads of ample width, easy grades, without unnecessary detours and sudden curves and with high class pavements will always cost more money, but will generally draw more traffic, and if the traffic is sufficient, will yield better returns than the less expensive class of construction. If, however, the traffic is not sufficient, the excess cost is an unwarranted waste of public money.

C. Gordon Reel, State superintendent of highways for New York, read a paper, entitled "Trunk Line System of Highways."

The whole development of improved roads in the State of New York, said the speaker, came about as the result of discussion and agitation of the subject in various forms for a long period, and culminated in 1898 in the enactment of the so-called Higbie-Armstrong law. The intent of this legislation was to begin the work of improvement and \$50,000 was appropriated from the general funds of the State to provide for its share of the

cost, which, under the provisions of this act, was to be borne jointly by the State, the county and the town, the State paying 50 per cent., the county 35 per cent. and the town 15 per cent. of the cost.

Under the Cobb law, passed in 1906, the percentage to be paid by the wealthier counties and towns remained the same as originally planned, although the poorer were reduced, the very lowest being 8 per cent. for the county and 2 per cent. for the town. The effect of this law was to reduce the amount of money available for highway improvement.

The highway law, which became effective in 1909, created a State department of highways and constituted three divisions of the State highway system, viz., State highways, to be constructed at the sole expense of the State; county highways, to be built at the joint expense of State, county and town, and town highways, to be maintained by the towns, supplemented by State aid.

The State highways, that is, those constructed at the sole expense of the State, comprise approximately 3,500 miles connecting the principal centres of population and forming a skeleton system, of which the county and towns are tributary.

As development progressed the demand for the completion of trunk lines grew apace, because it was discovered that construction under the original plan resulted in a disjointed, uncorrelated system. Chapter 532 of the laws of 1910 was the result of this demand, providing, as it did, the expedition of route No. 6, between Albany and Buffalo. The Legislature of 1911 provided for the speedy completion of 1,464 miles of these trunk line highways.

With the completion of work now under contract, approximately 3,200 miles of trunk lines will be provided. The short stretch from New York to the Connecticut line is now under contract.

Speaking on the "Construction of Gravel and Water-Bound Macadam Surfaces," Commissioner James H. MacDonald, of Connecticut, said:

The greatest destruction to the highway surfaces is not ascribable to the automobile, but to the poor construction of the roads, and no sentiment expressed during the congress has received heartier applause. He disclaimed any thought of being arbitrary in his views as to highway construction, stating that his only purpose was to describe the way in which roads had been constructed in Connecticut during the eighteen years in which he had been commissioner.

There is an abundance of trap rock in that State, but perhaps 65 per cent. of the roads are gravel or hard surface, because the materials for them are near at hand and the roads thus built answer every purpose. Mr. MacDonald argued strongly against importing materials for road building as long as those that answer are at hand, maintaining that good roads are a mat-

ter of construction after all, rather than of materials. As to construction, the speaker insisted first that the foundation for a road be of the very first importance. The subsurface should be adequately drained, he said, properly shaped and absolutely free from any loose or vegetable matter, which in time is fatal to a road. Upon this, the speaker places a telford foundation, laying the stones with the broader edge down and filling in with smaller stones until the surface is comparatively smooth. This foundation is used when necessary, even for gravel roads, and when laid as described is permanent. The gravel roads are constructed of three layers of gravel, differing in size. The first two layers are three inches thick, when rolled, and consist each of 80 per cent. gravel and 20 per cent. binder. The third, or wearing face, is of small gravel, and contains 40 per cent. of binder; the speaker has found it profitable, too, to add to the surfaces of these roads a little coat of trap rock screenings. As for the macadam roads, the speaker insisted that stone, in uniform cubes, could never form satisfactory macadam, for the simple reason that it is only as the rocks vary in shape and size that they can be rolled down into a solid surface. He had glass jars filled with the two kinds of rock present, and showed them to illustrate his remarks.

Albert Goldbeck, testing engineer, United States office of public roads, talked interestingly on the "Qualities, Test and Selection of Gravel and Stone."

The three things to be looked after in such road materials, Mr. Goldbeck declared, are toughness, as against the impact of traffic; hardness, to resist abrasion, and cementing value. He described the tests by which these qualities are to be ascertained in any given specimen, and gave his audience a general idea as to the value of different rocks, according to these tests.

Trap-rocks, for instance, the speaker said, are hard, tough and possess good cementing qualities. They therefore make most excellent road material, he explained. Granite is hard, but not very tough, and is deficient in cementing qualities, Mr. Goldbeck said. Sandstone is hard and tough, but lacks cementing quality altogether, he added.

Limestone is soft, it is not tough, but is a most excellent cement, Mr. Goldbeck declared. With a bituminous binder, the speaker asserted, it is perfectly proper to use rocks deficient in hardness, and many rocks which are quite impossible in water-bound macadam. In concluding his address he urged that no road material be used until it has proved by careful testing to be fitted for the purpose to which it is devoted.

William H. McConnell, chief of the bureau of highways, Philadelphia, taking issue with so-called practical road experts who disparage experimentation, at the closing session of the American Road Congress, declared it

is the duty of engineers to provide a good road surface, and that this cannot be accomplished without experiments along scientific lines.

He strongly advocated an association embracing public works departments for the purpose of standardizing specifications, and said that such a plan by preventing the repetition in any one locality of the mistakes made in another would result in increased efficiency and enormous savings in road expenditures.

"We are all striving to accomplish one purpose," said the Philadelphian, "and to bring about this result the engineers throughout the country should co-operate. There is no better way to do this than by constructing experimental surfaces and giving widespread publication to the data collected. It is a notable fact that in the sections of the country where experiments have been carried on you will invariably find the best roads.

"Experimental road surfaces are a great economy as a guide in constructing long sections of road and have prevented countless failures. There is no longer any excuse for a complete failure. Large sums of money are wasted every year in trying out new surfaces or methods of surfacing on roadways when the tests should be conducted upon short experimental stretches."

The address of Dr. A. S. Cushman, who spoke upon "Bituminous Materials," was largely devoted to showing the necessity of submitting any proposed bituminous binder to the analysis of a chemist before using it.

"No material entering into the construction of roads," Dr. Cushman declared, "differs more widely in quality than the bituminous binder."

Dr. Cushman differentiated these binders as native asphalt, petroleum oil residuum and tars and tar products and insisted that while each probably had its appropriate place in road construction, each must be selected only when it is known to meet the individual requirements of the particular road upon which it is to be used.

This is not as difficult as it might seem at first glance, Dr. Cushman said. The requirements of the road are known to the intelligent engineer, he explained, and he may ascertain the quality of the binder necessary by consulting a competent bitumen chemist.

Dr. Joseph Hyde Pratt, president of the Southern Appalachian Roads Association, declared fine highways in Europe made every point except a few remote districts of Russia, Norway and Sweden, accessible to visitors, but in America but few roads traversed sections famous for their scenery, chances for development and historic interest. The construction of highways leading from the main arteries of railroad systems, he asserted, would not only keep thousands who go to Europe for sightseeing in this country to view the wonders of the United States but bring other thousands from other shores to visit scenes of historic value.

MUNICIPAL APPLIANCES

Exhibits at American Road Congress.

The exhibits of manufacturers and dealers handling road machinery and supplies occupied the main building of the Million Dollar Pier. The heavy machinery was placed on the right hand side of the building which is most accessible on account of wide doors and an incline. The booths of supply dealers were under the balconies of the main building, which ordinarily is a dance hall, said to be the finest in the world. The government exhibits were at the end of the hall opposite the main entrance. The space allotted to the highway departments of the several states was in an extension of the building back of machinery hall. The impression to the visitor on entering the hall was pleasing. The general features of the hall were not interfered with by the undue prominence of any particular exhibit.

There were not many articles or materials exhibited that were wholly new. However, to anyone who had not seen a similar exhibition for several years it would seem decidedly novel. Moreover, the prominence given to certain lines of goods, shows the present trend of road construction in a clear and

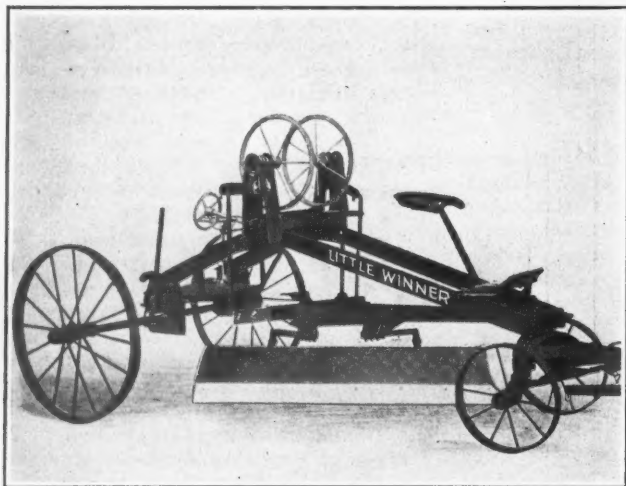
road construction in Allegheny County, Pa., where 300,000 gallons of their asphalt have been used.

The American Tar Company, Malden, Mass., photographs of construc-

Amies Road Company, Drake Building, Easton, Pa.: Photographs, literature and samples of the Amies road mixture, a material composed of bitumen rock, sand and some other ingredients, which permit the pavement to be laid cold, the hardening process taking place by subsequent physical or chemical action.



BARBER ASPHALT CO. AND IROQUOIS IRON WORKS BOOTH.



LITTLE WINNER ROAD GRADER.

easily understood way, an impression which the visitor could otherwise get only by considerable reading. The following account of the individual exhibits and the illustrations are intended to give to the reader as nearly as possible the impression of a visitor.

The Acme Road Machinery Co., Frankfort, N. Y.: Photographs and literature describing wagons, oil sprinklers, tar and asphalt wagons, a new road scarifier mounted on four wheels weighing 2,900 pounds, air compressors and drilling outfits.

The American Asphaltum and Rubber Company, Chicago, Ill.: Sections cut from roadways built according to the various standard methods of construction in which this company's materials were used. Photographs of

tion work in Eastern Massachusetts showing a number of ingenious devices made by the company.

American Steel and Wire Company, 72 West Adams street, Chicago, Ill.: Triangular wire mesh reinforcement; models showing method of inserting it in concrete pavements. The reinforcement is said to have a material effect in decreasing the tendency of concrete pavements to crack.

Association of American Portland Cement Manufacturers, 1526 Land Title Building, Philadelphia, Pa.: Illuminated photographs of various structures made of cement.

Atlas Portland Cement Co., 30 Broad street, New York: A circular track formed of sections of cement paving, over which rubber tired wheels are constantly run on a revolving axis. The wheels have made 27,000 miles and the wear is scarcely appreciable.

Austin Western Company, Karpen Building, Chicago, Ill.: Gasoline driven road rollers occupied the most prominent position in this exhibit; two rollers were shown, a single cylinder eight-ton roller and a two-cylinder ten-ton roller. The manufacturers state that gasoline rollers are giving excellent satisfaction and that the demand for them is increasing. As compared with



BUCYRUS STEAM SHOVEL CO. BOOTH.

steam rollers, the centre of gravity is low, hence they are less liable to upset. The small amount of water used, for cooling only, gives them a decided advantage where water is scarce. In park departments they are liked, as the danger of injury to trees by heat from the stock is eliminated.

A road oiling machine was exhibited which has just been placed on the market. The oil-carrying capacity is 450 gallons. Oil is forced out through the sprayer by a rotary pump operated by chain and sprocket from the rear driving wheel. The machine will spread road oil of the grades commonly known as numbers 1 to 6, the latter being the heaviest, containing 60 per cent. of asphalt. One of the most interesting machines in the exhibition is the motor lawn mower, and road roller, not exactly a road machine but valuable to park departments, on account of its large capacity for work, making it possible to cut the lawns frequently at small expense and at the same time benefit it by rolling. Samples of the older standard line of machinery were also shown, including a crusher, a light and a heavy road grader, a wagon, a scarifier, plows, etc.

Baker Manufacturing Company, Chicago, Ill.: Steel protection for expansion joints in cement pavements.

Barber Asphalt Paving Company, Philadelphia, Pa.: Model of the pitch



SAMPLE OF DOLARWAY PAVEMENT IN FOREGROUND.

broom is very narrow and the broom brought close up to it so that it may run close to the curbing picking the sweepings out of the gutter, a process that generally has to be done by hand. Other machines shown included a Milburn wagon, a Pillsbury oil spreader, a 20th Century road grader and a steel stone spreading cart.

Bausch & Lomb Optical Company, Rochester, N. Y.: Engineering and surveying instruments.

Bucyrus Steam Shovel Company, South Milwaukee, Wis.: Large photo-

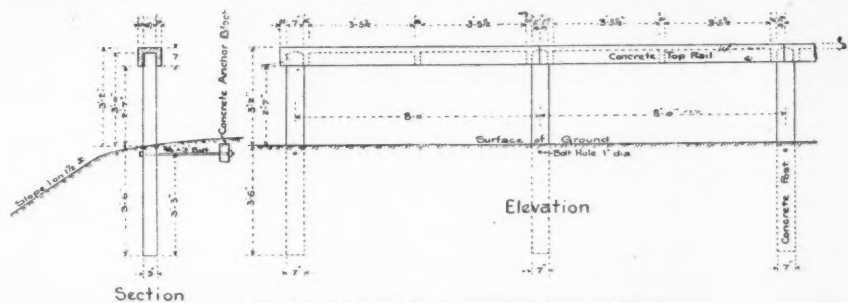
steel rods 3 ft. in length. On top of these posts are set reinforced concrete rails. These rails are 9 ins. broad on top, 7 ins. deep, the underside being cored out so as to leave the concrete 2 ins. in thickness throughout. The sides are braced by three concrete ribs 2 ins. in thickness, these cross ribs near the end of the rail forming sockets which jib over and clasp the top of the posts.

Dolarway Paving Company, 95 Liberty street, New York City: Samples of Dolarway pavement cut from pavements now in service. Photographs. Pamphlets.

Emerson - Brantingham Company, Waynesboro, Pa.: Peerless 10-ton steam road roller made by the Geiser division of the company. This is the roller placed on the market several years ago which has an ingenious method of attaching the front wheel by means of a pivot and framework back of the front roller itself. The arrangement is claimed to give the roller great flexibility and capacity for traveling safely over rough ground besides the ability to turn very short. Also a 20-ton traction engine.

A. B. Farquhar Company, York, Pa.: Style K steam traction engine, double cylinder, 20 horsepower, wheels are 24 in. smooth or 20 in. with flat cleats. Double geared, gears being of steel and having 5-in. faces. Gasoline traction engine, 30 horsepower, equipped with four 6 by 8-in. cylinders.

Frick Company, Waynesboro, Pa.: Rear wheel of a traction engine, show-



DIAGRAMS OF CONCRETE GUARD RAIL.

lake in Trinidad, showing facilities for handling the crude asphalt. Similar model of the Bermudez asphalt lake in Venezuela. Models showing the various stages of construction of bituminous macadam using Trinidad liquid asphalt and Bermudez asphalt. Samples of Trinidad and Bermudez asphalts, crude and refined. Glass cylinders showing the composition of a standard asphalt pavement surface mixture; the various grades of sand are separated, the coarsest at the bottom, each occupying a vertical space in proportion to its proper percentage, the whole showing at a glance the analysis of the pavement. Sections of pavements showing structure.

Barrett Manufacturing Company, 17 Battery place, New York, N. Y.: Photographs and literature.

Barron & Cole, Franklin street, New York City: A new pick-up street sweeper. The broom of usual construction throws the sweepings into a dust tin immediately in the rear. The bin has a sufficient capacity to hold the sweepings from several blocks. When full the bin is dumped by a lever where wanted. The wheel on one side of the

graphs of steam shovels at work on road construction, municipal and other work. The Class 14 B 18-ton revolving shovel is the type of shovel suitable for road work. It was the intention, according to Edward G. Lewis, who represented the company, to have one of those shovels at work on the beach, but owing to the press of orders there was no shovel available.

Concrete Guard Rail Company, Rochester, N. Y.: Samples of a concrete guard rail, shown in the illustration which is manufactured to conform to the standard detailed drawings of the New York State Department of Highways. It consists of posts 5 in. by 7 in. by 6 ft. 6 in. set firmly in the ground and anchored back into the embankment by concrete blocks 2 ft. long, attached to posts by $\frac{3}{4}$ in. galvanized



SECTION OF GLUTRINE TREATED SLAG PAVEMENT REMOVED FROM COVINGTON, VA.

ing unusual construction. Photographs and pamphlets.

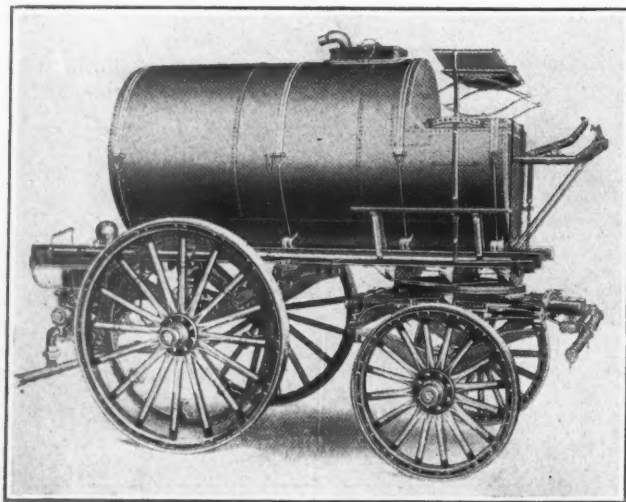
Good Roads Machinery Company, Kennett square, Pa.: Champion heating distributor. This machine consists of a steel tank, equipped with heating and distributing devices mounted on a platform spring gear truck. The outlet is placed at the bottom of the tank. Main shut-off valve in pipe immediately below the tank. Heating device is a kerosene oil burner located at the rear under the tank. Pressure is regulated by a rotary hydraulic pump of the inter-gear driven type driven through a series of sprockets and gears from one of the rear wheels of the machine. Steel models of two types of crushing outfits, the Fort Wayne and Champion. Model of four road machines of various types and sizes. The latest of these types is the Little Winner, a comparatively light machine of 1,700 pounds. The machine is claimed to have every practical adjustment known to modern road machines.

Hastings Paving Company, New York City. Asphalt blocks for highway construction. These blocks are made according to the same formula as the blocks used in the construction of city streets where they have stood the test of time and traffic. The only difference is in the dimensions, the blocks for highways being about 2 ins. thick. Models showing the system of construction recommended for use either on a new concrete or old macadam foundation.

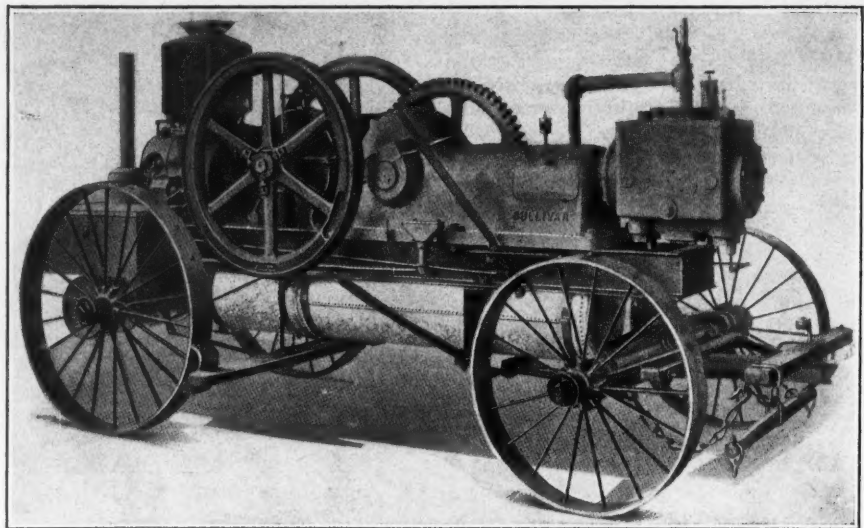
Charles Hvass & Company, 500 East 18th street, New York City: Wagon for spreading sand on pavements to prevent them from being too slippery. The sand or screenings runs out of the wagon onto a revolving cone and is thrown by it over the roadway. They may be used for spreading sand or screenings over an oiled road if the oil is of a grade that will not make trouble by sticking to the wheels of the wagon. Also street sweepers, sprinklers and other road machinery.

Iroquois Iron Works, Buffalo, N. Y.: A 5-ton asphalt roller.

Kent Machine Company, Kent, O.: Concrete mixer of the continuous type, the only continuous mixer in



STUDEBAKER ROAD OILER.



AIR COMPRESSOR CAPABLE OF RUNNING TWO DRILLS.

the exhibition. The feeding apparatus is claimed to be very accurate. It is a simple flat plate forming the bottom of the hopper which carries a definite amount forward at each successive movement, discharging it into the mixing trough.

Keystone National Powder Company, Emporia, Pa.: Packages showing the form in which the company's powders are put up.

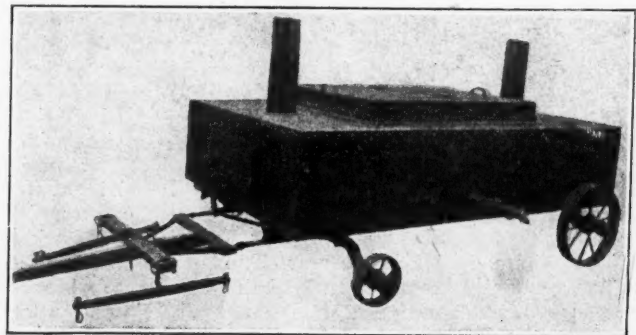
Koehring Machinery Company, Milwaukee, Wis.: Concrete mixer and hot mixer for use in bituminous road construction. The mixer is of the non-tilting drum type of substantial construction. Feeding is accomplished by an elevating hopper. The material is delivered into a bucket operated on a boom which can be swung from one side of the roadway to the other. In returning to place the empty bucket aids in spreading the material. The hot mixer is heated by an air blast from a rotary blower and a ten-unit fuel oil burner. The hot blast enters the drum, coming directly in contact with the material.

Municipal Engineering and Contracting Company, Chicago, Ill.: Cube concrete mixer, of one-third yard capacity. Feed is by elevating hopper. Distribution by bucket running on a boom.

National Association of Paving Brick Manufacturers: Samples of bricks made by each of the members of the association. Large col-

lection of very fine photographs of new and old brick pavements and work in course of construction. Section of a grouted brick pavement cut from an old street showing perfect grouting of joints.

Robeson Process Co., Au Sable Forks, N. Y., exhibited a sample of slag-glutrine pavement taken from Water street, Covington, Va. The first treatment of this road was three or four years ago. It was treated three times in this period with a solution of $\frac{1}{2}$ gallon to the square yard. About 9 months ago some new slag was spread over the road and a treatment of glutrine given it. The section of pavement cut up, shown in the illustration, was placed on a table in the Robeson booth. The shape of the sample and the photograph established the identity. The sample is remarkable, the binding action of the glutrine being extraordinary considering its small proportion to the mass. The material seems harder than ordinary cement concrete, though, perhaps, not as uniform as a mixed material. H. H. Hurt, chemist of the company, was present demonstrating certain tests showing the permanent binding chemical action of the glutrine. Samples in water, both cold and boiling, showed no disintegration. The chemical action of the elements of glutrine are complicated and require technical knowledge to understand. To those having this technical knowledge, Mr. Hurt explained the reaction minutely, to others as clearly as was possible.



A FIVE HUNDRED GALLON TAR KETTLE.

Standard Oil Company, 26 Broadway, N. Y.: Sample of road oils and asphalts. Photographs and pamphlets.

Standard Scale and Supply Co., 243 Water street, Pittsburgh, Pa.: Concrete mixer one-third cubic yard capacity, with side discharge; the truck carrying the mixer is of steel; the platform folds up to facilitate moving. The mixer sets unusually low and is designed to be charged directly from wheelbarrows making the operation very simple.

Studebaker Corporation, South Bend, Ind.: Road oiler for light and medium grade oils; in this machine the necessary pressure is obtained by means of a rotary pump operating through chains and sprockets from the rear wheel. The heater and distributor exhibited is for use with heavier bitumens than cannot be handled cold. In this machine compressed air is used for expelling the bitumen. The Studebaker bottom dump wagon for contractors. A dismounted wagon body for ashes or garbage, three cubic yard capacity. The body is covered by a frame with doors. A Studebaker street sprinkling wagon. Separate dismounted sprinkling apparatus of two designs. A Studebaker pneumatic flushing wagon. The flushing wagon operated by direct pressure of gasoline engine was not shown as this type machine is undergoing reconstruction with a new type of gasoline engine. The engine has given some trouble, but there is such a demand for this style of flusher from cities having too low water pressure to use the pneumatic machine to advantage, that the company is making every effort to perfect the power plant of the machine.

Sullivan Machinery Company, 150 Michigan avenue, Chicago, Ill.: Air compressor and outfit of drills specially designed to meet the needs of road builders. The compressors are in two sizes: 15 horsepower capacity, 92 cubic feet of air per minute delivered at a pressure of 90 pounds. A 20 horsepower compressor of same pattern having a capacity of 110 cubic feet per minute delivered at a pressure of 100 pounds. Hammer drills, which are recommended for all work up to 6 feet



SAMPLES OF MATERIALS—MODELS OF ROADWAYS.

in depth. A rock drill mounted on a tripod, the whole outfit being very light, weighing in fact 90 pounds less than an older standard type drill of only slightly greater diameter. This drill has been on the market only about one year. It is claimed to be the only drill on the market having an automatic oiling device. The 15 horsepower compressor will operate two hammer drills, one the 1 D B 19 and one 15. The larger compressor will operate a 2 D B 19 drill at full capacity or one 2 3/8 rock drill.

Tarrant Manufacturing Company, Saratoga Springs, N. Y.: Devices for handling tar and asphalt. Pump with a ball valve for handling road oils. Pouring cans with nozzle which can be adjusted to throw thick or thin stream. Tar kettles of several sizes having a number of ingenious details of construction, to give durability to the kettle itself, facilitate the draft, ease in transportation and convenience in working.

Institute of Industrial Research, 19th and B streets, Washington, D. C.: Laboratory appliances for testing road materials, particularly bitumens. Photographs and pamphlets.

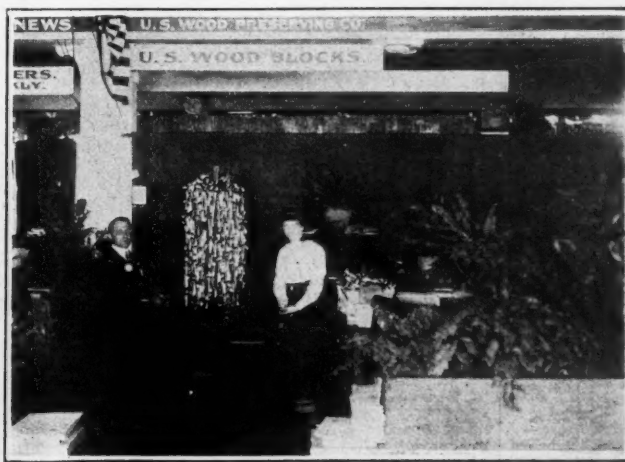
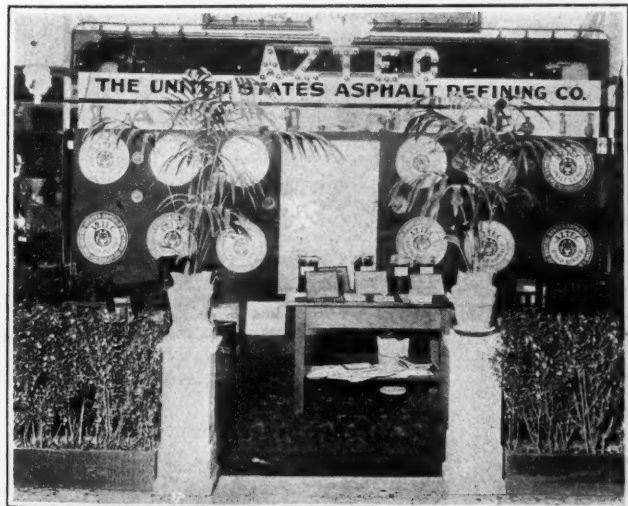
The Texas Company, 17 Battery place, New York City: Samples of road oils and asphalts, photographs and pamphlets. Parties were taken by representatives of the company to see

several streets in the city paved with Texas asphalt laid according to standard street asphalt specifications. The work was recently completed by B. F. Shanley Company of Jersey City, N. J. A commendable feature of the work, particularly in consideration of the fact that the company are newcomers in the business, is the mechanical excellence of the work, a feature often notably lacking in the work of new contractors in paving. The streets are paved with brick gutters which also adds to the attractive appearance. The pavement is hard but elastic, neither cutting or denting under October weather conditions, even in the sun. This pavement was mixed in a Cummer one car portable plant, which was also shown to visitors.

United States Asphalt Refining Company, 90 West street, New York: Samples of Aztec asphalt road oils and heavier asphalts. Photographs and pamphlets. One grade of road oil shown has been used quite successfully in treating ordinary dirt roads. There is considerable volatile oil in the grade which carries the bitumen down into the road. On evaporation an asphalt of good cementing properties remains.

United Gas Improvement Company, Philadelphia, Pa.: Samples of Ugite road tars of various grades. Pamphlets and literature.

Universal Portland Cement Com-



SAMPLES OF MATERIALS—MEXICAN DECORATIONS. SAMPLES OF WOOD BLOCKS, FULL SIZE AND MINIATURE.

pany, 72 West Adams street, Chicago, Ill.: Models of cement roadways. Photographs and pamphlets.

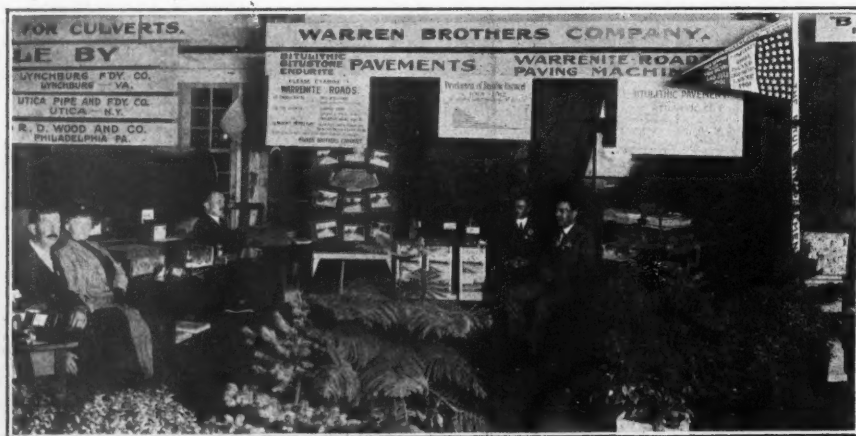
U. S. Wood Preserving Company, 165 Broadway, New York City: Samples of wood blocks before and after treatment. Photographs and pamphlets. The company distributed a souvenir which was in this line the hit of the exhibition. It was a miniature wood block decorated with colored ribbons to be used as a pin.

Warren Bros., 59 Temple place, Boston, Mass.: Sections of bitulithic, Warrenite, bitustone and endurite pavements cut from streets. Samples in glass cylinders showing the percentage composition of the bitulithic mixture and comparing it with a pavement mixture made under Topeka specifications. There were two cylinders for each mixture. One showing the grades separated, the other with grades mixed showing the extent to which the material packs when mixed and laid. Representatives of the company organized parties to visit bituminous pavements in course of construction and recently finished, on the outskirts of the city near Margate. The pavements were Warrenite; Topeka specifications, bituminous concrete; an open mixture bituminous concrete and a bituminous macadam penetration method laid three inches thick on a concrete foundation.

Watson Wagon Company, Canastota, N. Y. A Watson two yard bottom dumping wagon. Photographs and literature.

Spray Nozzle Company, Boston, Mass. Samples of nozzles made for asphalt distributors. The nozzle gives the stream a spiral motion. This delivers the liquid in a fine spray. At the same time the construction leaves a clear passageway for the bitumen through the nozzle, allowing the heaviest and most difficult kinds to be handled. The company also makes a road machine on which these nozzles are used.

National Safety Wood Paving Company, Boston, Mass. Samples of wooden blocks creosoted, made from Southern pine. Through the center surface of the block is cut a channel 2 by $\frac{3}{8}$ inch. In the center of the channel is cut a groove in which is inserted a bar of steel called a grid, measuring $\frac{1}{4} \times \frac{1}{2} \times 1$ inch.

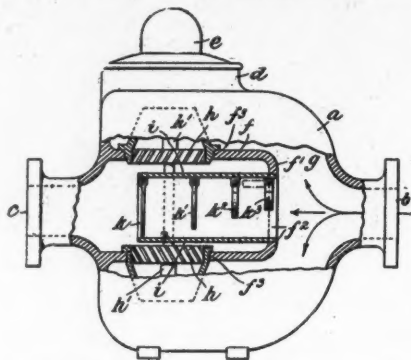


SECTIONS OF PAVEMENTS—ANALYSIS OF PAVEMENT MIXTURES.

PATENT CLAIMS

1,037,431. WATER-METER. James M. Burton, Long Island City, N. Y., assignor to Neptune Meter Company, New York, N. Y., a Corporation of New Jersey. Filed April 6, 1912. Serial No. 688,900.

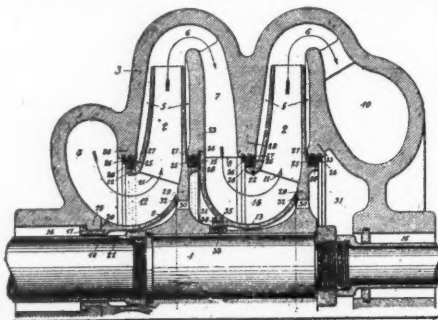
In a proportional meter, the combination of a meter shell having an inlet at one end and an outlet at the other end, a wall between the inlet and the outlet having a main flow aperture of substantially the same area as the inlet and the outlet and having also a meas-



uring aperture, a free passage from the inlet to the measuring aperture being provided within the shell, a measuring wheel located in the measuring aperture, a sleeve extended from the main flow aperture toward the outlet, and a plurality of resistance valves hung in said sleeve.

1,037,243. CENTRIFUGAL PUMP. Albert E. Guy, Trenton, N. J. Filed March 11, 1912. Serial No. 682,967.

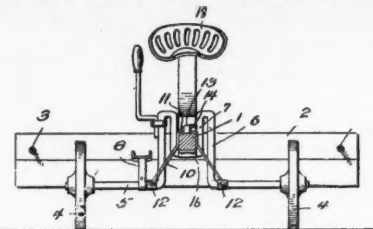
A centrifugal pump comprising in combination a casing formed with an intake chamber and an impeller chamber, a shaft rotatable in said casing and carrying an impeller located in said impeller chamber, said impeller being formed on either side with an annular extension and plurality of radially extending, separately renewable, spaced annular flanges removably mounted on each extension and rotating with said impeller, and a plurality of radially arranged, separately renewable spaced



annular flanges removably but non-rotatably mounted in the bore of each wall of the impeller chamber and arranged to cooperate with said impeller flanges, adjoining radially extending faces of said stationary and of said rotating flanges forming walls of restricted passages for intercepting egress of liquid from the impeller chamber.

1,037,281. ROAD-GRADING MACHINE. Christian Maves, Davenport, Iowa. Filed Nov. 6, 1911. Serial No. 658,900.

In a road grading machine, the combination with a scraper blade of a pole rigidly connected to said blade, crank axes pivoted to said pole and adjustable laterally therewith, wheels journaled on said crank axes, means



for adjusting said axes in one fixed position, a brace slidably disposed on the pole and means for locking the brace to hold the wheels in their rearward adjustment and for supporting the scraper from contact with the ground.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago: September tonnage was the largest of any month this year. Inquiries are heavy. Quotations: 4-inch, \$30; 6 to 12 inch, \$28; 16-inch and up, \$27. San Francisco: Many water and gas corporations are now buying small amounts, and municipal inquiries are increasing, with prospects for a heavy tonnage. New York: General demand continues active, particularly regarding the smaller sizes. Prices are higher. Quotations: 6-inch, carloads, \$24.50 to \$26.

Lead.—The market is dull but very firm. Quotations: New York, 5.10c.; St. Louis, 4.95c.

Receivership.—The Knox Automobile Company, of Springfield, Mass., manufacturers of automobile fire apparatus, has assigned to Edward O. Sutton and Harry G. Fiske, representing the creditors who agreed to the assignment. The liabilities of the Company are about \$1,250,000, of which about \$1,000,000 is due those represented by Mr. Sutton and Mr. Fiske. The plant will not be closed, Mr. Sutton said.

Pumping Engines.—In connection with the revival of business this fall a noteworthy feature is the greatly increased activity in the re-equipment or extension of water works pumping plants, both municipal and industrial, with high efficiency pumping engines. Among recent contracts for pumping engines reported by Allis-Chalmers Company, Milwaukee, are the following:

Toledo, O., one, 30,000,000 gallons daily capacity; Hopkinsville, Ky., one, 1,750,000 gallons daily capacity; St. Paul, Minn., one, 1,500,000 gallons daily capacity; South Bend, Ind., two, 5,000,000 gallons daily capacity; Independence, Kan., one, 4,000,000 gallons daily capacity; Havana, Cuba, one, 5,000,000 gallons daily capacity; Waco, Texas, two, 5,000,000 gallons daily capacity; Winfield, Kan., one, 3,000,000 gallons daily capacity; Pittsburg Steel Company, four, 15,000,000 gallons daily capacity; Peoria Water Works Company, Peoria, Ill., one, 10,000,000 gallons daily capacity.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Ohio.....	Cleveland.....	Oct. 12, noon.....	Furn. asphalt cement for street repairs..	W. J. Springborn, Dir. Pub. Ser.
Kansas.....	Manhattan.....	Oct. 12, noon.....	Constrn. stone roads	County Clerk.
Mississippi..	Booneville.....	Oct. 14.....	Constrn. road improvements	D. L. Holley, Sec.
Texas.....	Sherman.....	Oct. 14, 10.30 a.m.	Constrn. 96,000 yds. asphalt, bitulithic or similar pavement and 36,000 yds. brick or wood block, curbing, drainage, &c..	P. C. Thurmond, City Engr.
Pennsylvania	Philadelphia.....	Oct. 15, 11 a.m.....	Constrn. asphalt roads	J. T. Vogdes, Chief Engr.
Alabama.....	Rockford.....	Oct. 15.....	Surfacing 5 miles road	J. A. Crawford, Probate Judge.
Pennsylvania	Harrisburg.....	Oct. 15, 10 a.m.....	Constrn. 17 sections of State highways..	E. M. Bigelow, St. Hwy Comr.
New York.....	Dunkirk.....	Oct. 15.....	Constrn. 1,200 yds. pavement	R. H. Heppell, City Clerk.
Mississippi..	Laurel.....	Oct. 15, 2 p.m.....	Constrn. 18,000 yds. brick or wood paving.	S. M. Jones, Chrmn. Com.
Illinois.....	Assumption.....	Oct. 15, 2 p.m.....	Constrn. 6,572 sq. yds. brick pavement, cost \$15,117	R. F. Johnson, Sec. B. L. I.
New York....	St. George.....	Oct. 15, noon.....	Constrn. vit. brick pavement in gutters..	G. Cromwell, Pres. Boro.
Maryland....	Rockville.....	Oct. 15, noon.....	Constrn. 46-mile section highway	J. T. White, Pr. Co. Comrs.
Iowa.....	Dubuque.....	Oct. 15.....	Constrn. 10,000 sq. yds. vitrified paving..	C. H. Baumgartner, City Engr.
Ohio.....	Hamilton.....	Oct. 16, 10 a.m.....	Grading and graveling Bryant rd.....	W. W. Crawford, Co. Aud.
Pennsylvania	Harrisburg.....	Oct. 17.....	Constrn. Route No. 5.....	State Highway Dept.
Alabama.....	Marion.....	Oct. 17.....	Constrn. 4 miles West Perry Road.....	Geo. C. Scales, Co. Highway Engr., Montgomery.
Virginia.....	Alexandria Ct. H.	Oct. 18, noon.....	Imp. $\frac{3}{4}$ mile turnpike	County Commissioners.
Wisconsin....	Tomah.....	Oct. 19.....	Constrn. brick pavement	Daniel Crowley, Ch. Com. P. W.
California....	Sacramento.....	Oct. 21, 2 p.m.....	Constrn. number sections of State Hwyay.	A. B. Fletcher, Hwy. Engr.
Alabama.....	Marion.....	Oct. 21, 2 p.m.....	Con. 4 miles sand clay & 4 gravel rds.....	G. C. Scales, Engr.
Alabama.....	Linden.....	Oct. 22, 10 a.m.....	Constrn. 4 miles sand clay road	County Commissioners.
Alabama.....	Birmingham.....	Oct. 24, noon.....	Constrn. 3 miles chert road	County Board.
Ohio.....	Cincinnati.....	Oct. 25, noon.....	Repairing Springfield pike	Stanley Struble, Pres. Comrs.
Indiana.....	Richmond.....	Oct. 26, 11 a.m.....	Imp. highway	L. F. Bowman, Co. Aud.
Ohio.....	London.....	Oct. 27.....	Constrn. gravel roads	H. L. McCafferty, Co. Surv.
New Jersey..	New Brunswick..	Oct. 28.....	Constrn. macadam roads	A. B. Fox, Co. Engr.
Indiana.....	Logansport.....	Nov. 8, 10 a.m.....	Constrn. road	J. E. Wallace, Co. Aud.
SEWERAGE				
Texas.....	Clarksville.....	Oct. 14, 8 p.m.....	Install. sewerage system & disposal plant.	J. R. Webb, City Clerk.
Tennessee....	Knoxville.....	Oct. 14.....	Constrn. sewer	Nagel & Peterson, Engrs., Muskogee, Okla.
Michigan....	Bay City.....	Oct. 14, 9 a.m.....	Constrn. 12-in. pipe sewer	Commissioners.
Tennessee....	Knoxville.....	Oct. 14, noon.....	Constrn. 8,000 ft. 33 to 42-in. sewer	R. O. Woodruff, Ch. B. P. W.
Pennsylvania	McKees Rocks....	Oct. 14, 8 p.m.....	Constrn. 1,850 ft. concrete and 2,500 ft. pipe sewers	J. E. Thompson, City Engr.
New York....	Canandaigua.....	Oct. 15, 8 p.m.....	Constrn. sanitary sewers	G. H. McGinness, Boro. Engr.
California....	Hemet.....	Oct. 15.....	Constrn. sewer system	T. Johnson, Pres. Comrs.
Illinois.....	Assumption.....	Oct. 15, 2 p.m.....	Constrn. sanitary and storm sewer system; estimated cost \$33,372	C. M. Ditterick, City Clerk.
Mississippi..	Laurel.....	Oct. 15, 2 p.m.....	Constrn. 4,000 ft. 12 to 24-in. sewers	R. F. Johnson, Sec. B. L. I.
Oregon.....	Bend.....	Oct. 16, 9 a.m.....	Constrn. about 5 miles 8 to 20-in. clay pipe sewers, &c.	F. M. Jones, Sec.
New York....	Brooklyn.....	Oct. 16, 11 a.m.....	Constrn. sewers in number sts.....	City Recorder.
Illinois.....	Fulton.....	Oct. 19, 9 a.m.....	Constrn. system of sewers	A. E. Steers, Boro. Pres.
Minnesota....	Pipestone.....	Oct. 21, 8 p.m.....	Constrn. a number of sewers	M. W. Ingwersen, Pres. B. L. I.
Ohio.....	Napoleon.....	Oct. 21, noon.....	Constrn. storm and sanitary sewer	S. W. Funk, City Recorder.
Minnesota....	Fergus Falls.....	Oct. 21, 8 p.m.....	Constrn. 2 sewers	J. J. Downey, Vil. Clerk.
Ohio.....	Fostoria.....	Oct. 23, noon.....	Constrn. sewer in Seneca ave.....	S. A. Levorsen, City Clerk.
Rhode Island	Newport.....	Oct. 26, 11 a.m.....	Constrn. catch basins, &c., at Naval Sta'n.	R. J. Barrett, Clerk.
Virginia.....	Bridgewater.....	Oct. 26, 3 p.m.....	Constrn. system of sanitary sewers and water works	H. H. Stanford, Wash., D. C.
Iowa.....	Esterville.....	Oct. 31, noon.....	Constrn. 1,250 ft. 8-in. clay pipes	L. V. Miller, Ch. Water Com.
Iowa.....	Tipton.....	Jan. 15.....	Constrn. sewers	N. B. Egbert, City Clerk.
WATER SUPPLY				
No. Dakota..	Enderlin.....	Oct. 12, 6 p.m.....	Constrn. pumping plant, water tower, digging wells	P. D. Ketelsen, City Clerk.
Florida.....	Ft. Lauderdale...	Oct. 12.....	Constrn. water works sys. cost \$20,000..	L. Edinger, City Aud.
Michigan....	Newaygo.....	Oct. 12 (about).....	Constrn. water works	D. D. Oliver, Town Clerk.
Iowa.....	Cedar Rapids.....	Oct. 14.....	Constrn. filter house	J. W. Bell, Mayor.
Iowa.....	Dunlap.....	Oct. 14, 8 p.m.....	Constrn. extension to water works	W. J. Brown, Engr., Security Savings Bank Bldg.
Dist. Columbia	Washington.....	Oct. 14, noon.....	Constrn. concrete paving in reservoir...	R. W. Wettengald, City Clerk.
Virginia.....	Portsmouth.....	Oct. 15, noon.....	Furn. 9,700 tons 4 to 6-in. c-i. pipe, valve boxes, &c.	W. C. Langfitt, Lt. Col. Engrs.
New York....	New York.....	Oct. 15, 11 a.m.....	Furn. 3 steel floats, 650 ft. steel pipe, &c..	W. G. Parker, Pres. Comrs.
Iowa.....	Muscatine.....	Oct. 15.....	Constrn. 200,000 gal. and tower	Bd. Water Supply.
Texas.....	Port Arthur.....	Oct. 15, 3 p.m.....	Constrn. about 34,000 ft. wood pipe line..	T. R. Fitzgerald, Sec. Trustees.
California....	Los Angeles.....	Oct. 15, 2 p.m.....	Furn. st'l rivets for San Fernando siphon.	C. C. Crew, Consulting Engr.
Ohio.....	Akron.....	Oct. 15, noon.....	Laying cast iron pipe	J. P. Vroman, Sec. Bd. Pub. Ser. Comrs.
Illinois.....	Chicago.....	Oct. 15.....	Furn. 4 steam turbine pumps, 25,000,000 gal. capacity	R. N. Pillmore, Dir. Pub. Ser.
Illinois.....	Chicago.....	Oct. 16, noon.....	Constrn. 5-ft. water sup. tunnel & shaft..	L. E. McGann, Comr. Pub. Wks.
Ohio.....	Lima.....	Oct. 17.....	Constrn. concrete reservoir at hospital..	J. F. Neil, Sec. Comrs.
Minnesota....	Deer River.....	Oct. 17, 8 p.m.....	Con. air lift water works & power house..	S. A. Hoskins, Pres.
New Jersey..	Newark.....	Oct. 17, 3.30 p.m.	Furn. 3,200 tons c-i. pipe, 75 tons specials.	Fred. Breid, Vil. Pres.
Ohio.....	Lorain.....	Oct. 18, noon.....	Constrn. 48-in. intake pipe	M. R. Sherrard, Chief Engr.
New Jersey..	Trenton.....	Oct. 18.....	Constrn. water purification works	L. B. Johnston, Clerk.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Iowa.....	Smithland.....	Oct. 21.....	Install. munic. water system, cost \$7,000.	J. F. Yockey, Vill. Clerk.
New Jersey.....	Jersey City.....	Oct. 21, 2 p.m.....	Furn. gas & oil st. lighting for year.....	E. B. See, Clerk.
Indiana.....	Huntington.....	Oct. 21, 7.30 p.m.....	Con. 6-in. water main	L. Bamberger, City Clerk.
Nebraska.....	Plymouth.....	Oct. 21, 9 p.m.....	Constrn. steel tank, tower, &c	J. M. Wildhaber, Vill. Clk.
Louisiana.....	Morgan City.....	Oct. 22, 8 p.m.....	Constrn. pumping station	A. B. O'Brien, Sec.
Ohio.....	Alliance.....	Oct. 24.....	Constrn. 6,000,000 filter plant, &c	D. M. Armstrong, Dir.
Virginia.....	Bridgewater.....	Oct. 26.....	Constrn. water works & sewers	L. V. Miller, Ch. Water Com.
Texas.....	Waco.....	Oct. 28.....	Con. reinforced conc. water works intake.	W. M. Sleeper, Chrmn. Com.
Indiana.....	Richmond.....	Oct. 30, 10 a.m.....	Furn. water to city for 25 years	B. A. Bescher, City Clerk.
Texas.....	Dallas.....	Nov. 1.....	Constrn. pumping station	J. B. Winslett, City Sec.
Porto Rico.....	Fajardo.....	Nov. 8.....	Constrn. water works	Manuel Guzman, Mayor.
LIGHTING AND POWER				
Dist. Col....	Washington.....	Oct. 15, 10.30 a.m.....	Furn. lighting material for Panama locks.	General Puren, Agt.
Virginia.....	Dublin.....	Oct. 18.....	Constrn. electric light plant	G. C. Moomaw, Mayor.
New York.....	Freeport.....	Oct. 18.....	Improving water & electric light plant..	S. P. Shea, Vill. Clerk.
Dist. Col....	Washington.....	Oct. 21 3 p.m.....	Furnishing lighting, heating, electrical conduits, wiring, & interior lighting fixtures at Moorhead, Minn.....	Oscar Wenderoth, Supv. Archt.
Texas.....	Galveston.....	Oct. 24, noon.....	Furn. surface condenser complete	J. D. Kelley, City Sec.
Canada.....	Yorkton, Sask.....	Oct. 31, noon.....	Furn. 500 h.-p. Diesel engines, tungsten st. lighting apparatus, &c.	M. M. Ingles, Elec. Engr.
FIRE EQUIPMENT				
Dist. Colum..	Washington.....	Oct. 15, 2 p.m.....	Furn. 15,000 ft. 2½-in. cotton-covered, rubber-lined hose	C. H. Rudolph, Comr.
Colorado.....	Pueblo.....	Oct. 16.....	Furn. combination chemical and tractor..	J. K. Burton, Comr.
Ohio.....	Akron.....	Oct. 25, noon.....	Furn. 85-ft. aerial ladder truck motor tractor, comb. chem. hose & ladder wagon comb. pump, eng., chem. & hose.	D. P. Stein, Dir. Pub. Safety.
Ohio.....	Akron.....	Oct. 25, noon.....	Furnishing automobile fire apparatus....	D. P. Stein, Dir. Pub. Safety.
BRIDGES				
Ohio.....	Steubenville.....	Oct. 18, noon.....	Constrn. 3 superstructures	S. M. Floyd, Clerk.
Texas.....	Port Worth.....	Oct. 23, noon.....	Constrn. 2 concrete viaducts	J. A. Mulholland, Co. Aud.
MISCELLANEOUS				
Indiana.....	Richmond.....	Oct. 12, 11 a.m.....	Con. wood floors on number of bridges..	L. S. Bowman, Co. Aud.
Pennsylvania	Edgewood.....	Oct. 12, noon.....	Imp. river bed	D. C. Neal, Boro. Engr.
New Jersey..	South Orange.....	Oct. 14.....	Erecting shelter house on playground...	C. E. Colley, Ch. Vil. Playground Commission.
No. Dakota...	Bismarck.....	Oct. 15, 2 p.m.....	Furn. 10,000 automobile tags, 1,000 motor cycle tags.	P. D. Norton, Sec. of State.
Georgia.....	Augusta.....	Oct. 15, 4 p.m.....	Constrn. locks and gates in canal	Nisbet Wingfield, Chief Engr.
California....	Pasadena.....	Oct. 15.....	Sweeping and flushing streets	City Council.
New York.....	Brooklyn.....	Oct. 17, 3 p.m.....	Furn. arboriculturists' wagons	C. B. Stover, Pr. Park Com.
New Jersey..	Newark.....	Oct. 17, 6.30 p.m.....	Removing refuse and snow and ice around Centre Market for one year	T. J. Rowe, Market Clerk.
California....	Los Angeles.....	Oct. 18.....	Constrn. concrete wharf	Board of Pub. Works.
Florida.....	Pensacola.....	Oct. 21, 4 p.m.....	Furn. uniforms for Police & Fire Dept..	L. G. Aymard, City Clk.
Ohio.....	Youngstown.....	Oct. 24.....	Constrn. city building	Director Pub. Serv.
New York.....	New York.....	Oct. 24, 2 p.m.....	Constrn. & equipping asphalt plant.....	Geo. McAneny, Boro. Pres.
New Jersey..	Jersey City.....	Oct. 28, 2 p.m.....	Collecting and removing garbage, ashes and kitchen refuse one year	E. B. See, Clk. St. & Wat. Comrs.

STREET IMPROVEMENTS

Phoenix, Ariz.—Improvement of Grand ave. and other thoroughfares is planned.

Los Angeles, Cal.—Petitions have been received for improvement of various streets.

Los Angeles, Cal.—Competition in purchase of street flushers is suggested by Board of Public Works and Council has been asked to advertise for bids for three machines.

Los Angeles, Cal.—Widening of Country Club boulevard is being considered.

Los Angeles, Cal.—Recommendations for the improvement of Mission road so as to form another connection with county system beyond Eastlake park have been made to Council by Board of Public Works.

Los Angeles, Cal.—About \$100,000 will be needed to finance Los Angeles-Colonyuma section of ocean-to-ocean highway.

Los Angeles, Cal.—According to estimate made by City Engineer Homer Hamlin of probable cost of improving Pacific ave. from San Pedro-Wilmington road to intersection of Fourteenth and Beacon sts., city's temporary boulevard to harbor, on improvement of which Board of Public Works finally determined will approximate \$133,000.

Pasadena, Cal.—Allen ave. is to be converted into boulevard 100 ft. wide.

Sacramento, Cal.—Plans are being considered for extension of E st.

San Francisco, Cal.—Board of Supervisors has authorized paving of Powell st. from Market to Bush sts.

Bristol, Conn.—Highway Commissioner's office will advertise for bids at once for improvement of about two miles of roadway easterly from Lewis Corners on the Farmington road.

Hartford, Conn.—Bids have been asked for construction of work in various State highways.

Naugatuck, Conn.—Voters have decided to ask Borough Board to widen Prospect st. to 40 ft. and to grade it at once.

Waterbury, Conn.—Bids for paving of Brown st. and part of North Elm st. will again be called for by Board of Public Works. Only bid received that of Fliege & Archambault, for \$17,000, was rejected.

Chicago Ill.—Council has ordered referendum at election Nov. 5 on \$1,750,000 bond issue for widening Twelfth st., between South Michigan and South Ashland ave.

Decatur, Ind.—City Council has let three large street contracts, cost of improvements being over \$100,000.

Ft. Wayne, Ind.—Resolution has been adopted for opening and extending of Harrison st.

Fort Wayne, Ind.—Improvement of Anthony blvd. is being planned.

Hyattsville, Ind.—It has been ordered that chairman of Road Committee be authorized to make sidewalk improvements in Sheridan ave.

Indianapolis, Ind.—Board of Public Works has under consideration resolution for widening Thirty-eighth st., from Capitol ave. to Fall Creek.

New Albany, Ind.—The New Albany Board of Public Works has adopted specifications for proposed improvement of E. Eighth st. but it is probable that work on improvement will not be begun until next spring. Specifications provide for 38-ft. sarco macadam roadway from Spring st. from Culbertson ave., and 30-ft. roadway from Culbertson ave. to Beeler st. Seven-ft. grani-toid pavement from Spring to Beeler st. is provided.

Lawrence, Mass.—Orders have been adopted for construction of many sidewalks.

Malden, Mass.—Construction of street on Baker's Hill, connecting Bowers ave. with Plymouth st. is being favorably considered.

Marblehead, Mass.—Board of Selectmen will call a special town meeting to see if town will appropriate \$2,000 to grade Tedesco st.

Bay City, Mich.—Various street improvements are planned.

Duluth, Minn.—Petition has been received for improvement of Vernon st. from Grand Forks ave. to west line of Bryant's addition. Petition has also been received for grading of Vermilion road from Princeton ave. to Ontario st.

Duluth, Minn.—R. C. Sloan, property owner on Twentieth ave. west, is circulating petition for paving of that thoroughfare from Northern Pacific station to Third st.

Hastings, Neb.—Council has ordered purchase of 70-foot strip of ground on Conrad Bauer's place, for extension of Bellevue ave. from C to E st. Strip is needed for drainage purposes.

Hastings, Neb.—Petition will be circulated for opening of a new street on East Side.

Atlantic City, N. J.—Paving on west side is recommended.

Camden, N. J.—Ordinance has been passed directing paving of Lemon st., from Haddon ave. to Camden and Atlantic Railroad with vitrified brick on 4-in. concrete foundation.

Jersey City, N. J.—Improvement of Union st. has been authorized.

Jersey City, N. J.—Appropriation has been secured for repairing Palisade ave.

Millville, N. J.—Mass meeting has been held to try to induce State Road Commission to adopt Millville route in construction of State road connecting county seats of Bridgeton and Mays Landing.

Newark, N. J.—Improvement of Pas-saic ave. and Turnpike rd. is urged.

Oaklyn, N. J.—Oaklyn Borough Council has decided to curb and gutter and macadamize Newton ave. for its entire length. Half a mile of cement sidewalks to Contractor Le Cato.

Roselle Park, N. J.—Ordinance has been passed providing for paving of Chestnut st., also for macadamizing of Clay ave.

Roosevelt, N. J.—Borough Engineer has submitted plans to Council for paving Cowell st. from Rahway ave. to point south of Randolph st., same to be paved with vitrified paving brick.

Somer's Point, N. J.—New Jersey ave. will be extended from Bay ave. to the thoroughfare.

Ventnor City, N. J.—Ordinance has been passed authorizing bond issue of \$25,000 for street improvements.

Brooklyn, N. Y.—President Maurice E. Connolly, of Queens, is now, with assistance of Engineer Clifford B. Moore, of Topographical Department, making every effort to have a north and south highway built to connect populous Woodhaven, Richmond Hill and Glendale sections that are now separated by cemeteries and portion of Forest Park. Proposed new thoroughfare will lie wholly in Forest Park, on its westerly boundary, adjoining Cypress Hills Cemetery. It will start from Jamaica ave., Woodhaven, and will lead directly north through Forest Park and Glendale to Middle Village, Maspeth and Elmhurst.

Mayville, N. Y.—Board has given authority to Town Board of French Creek to issue bonds in amount of \$3,000 to take care of town's share of cost of improving Cutting-French Creek highway.

New York City, N. Y.—Borough of Manhattan contemplates purchase of large hot mixer paving plant, also a portable hot-mixer for repair work. E. B. Goodrich Consulting Engineer, Borough President's office.

Niagara Falls, N. Y.—Resolution has been adopted for laying of sidewalks in various streets.

Rome, N. Y.—Plans and estimates have been presented from Board of Public Works for improvement of Bloomfield st., from George to Madison sts., at cost of \$5,878.72, and have been approved.

Rye, N. Y.—Board of Trustees of Village of Rye has sold \$138,000 highway improvement bonds to Harvey riske & Sons.

Wappinger Falls, N. Y.—By 96 to 3 taxpayers of Wappinger Falls have voted affirmatively on proposal authorizing Board of Trustees to contract with State for construction of State road within village, from corporation line at the Wappingers Cemetery to connect with State road at Mesier Park gate and with Fishkill-on-the-Hudson State road at southerly boundary of the village, and issue village bonds to extent of \$12,000 to defray village's portion of expense.

Yorkville, N. Y.—Special election in regard to paving Main st. has been held from 4 to 8 p. m. Only 17 votes were cast, but all were in favor of proposition. It provides for paving Main st., from junction of Whitesboro, south to village line. Cost will be something in excess of \$5,000.

Akron, O.—Ordinance has been passed determining to proceed with improvement of Westwood ave. from Crosby st. to Maple st. by grading, curbing and paving.

Cincinnati, O.—On the ground that they were too high Service Director Price has rejected all bids for paving Beekman st., from Elmore st. to corporation line.

Dayton, O.—Bids are being received for improvement of number of streets, in which Market st. is included.

Hamilton, O.—Ordinance has been passed determining to proceed with paving of Sycamore, from Front st. to East ave., and with improvement of Beckett, from Front st. to Gordon ave., by constructing sanitary sewer.

Hamilton, O.—Resolution has been passed instructing Street Commissioner to grade and gravel alley north of Black and between Second and Third sts.

Hamilton, O.—City Council is considering resurfacing of South Second st.

Lisbon, O.—County Commissioners contract of paving Lisbon and Carrollton road near Salineville on grounds that estimate was lower than bids presented. Commissioners will readvertise and receive bids on contract.

Port Clinton, O.—Ten thousand dollars' worth of Erie Township road bonds were sold at La Carne to Hayden, Miller & Co., of Cleveland. Money will be used for improving road from La Carne to Camp Perry, and for other township purposes.

Springfield, O.—All bids upon paving of alleys from Columbia to North st., between Fountain ave. and Spring st., have been rejected.

Allentown, Pa.—Mayor Charles W. Rinn has signed bond loan bill passed

by Allentown Council to borrow \$55,000, mostly for street improvements.

Erie, Pa.—Mayor Stern has signed ordinance authorizing improvement in Ash st., Fifteenth to Eighteenth st., and including work on Ash st. subway.

Erie, Pa.—Improvement of roadway near Frontier Farm on West Lake rd. has been authorized.

Erie, Pa.—Improvements to various streets are planned.

Farrell, Pa.—New \$50,000 issue of bonds for street improvement and for purpose of paying \$20,000 of debt of borough was awarded by Farrell Council to firm of J. L. & W. L. Kuhn, of Chicago.

Harrisburg, Pa.—Ordinance has been passed finally for repaving of Strawberry st., between Second and Third sts.

Harrisburg, Pa.—Plans have been formulated for turning of vicinity of Paxton Creek, between Maclay and Reiley sts., from unattractive spot into fine park driveway along the stream.

Johnstown, Pa.—Bond issue of \$13,500 for street improvements is being considered.

Meadville, Pa.—Paving of Cottage st. and Cherry alley is being considered.

Philadelphia, Pa.—Plans are being considered for widening and extending streets in the "Hump" district.

Shamokin, Pa.—Repairing of Seventh st. is being considered.

Wilkes-Barre, Pa.—Part of the proceeds of \$350,000 city improvement bonds will be used for paving various streets.

Providence, R. I.—Public Utilities Commission has given its consent to establishment of public highway over tracks of Providence, Warren and Bristol Railroad Company, at grade, extending from South Main st., Warren, to Warren River.

Woonsocket, R. I.—Joint Standing Committee on Finance of City Council has voted to recommend appropriation of \$1,500 for macadamizing of Lyman st. Additional appropriation of \$1,360 for macadamizing of Woodland rd. will also be recommended.

Nashville, Tenn.—Appropriation bills for construction of Capitol blvd. has passed final reading in City Council.

Nashville, Tenn.—Plans have been made for building road encircling city. It will be nearly 40 miles in length.

Brownsville, Tex.—City will shortly begin construction of more than mile of paved streets to add to already extensive paved area, new work for which contract has been let costing approximately \$40,000. Paving is of creosoted wood block construction. Included in new district to be paved will be four blocks surrounding city hall.

Corpus Christi, Tex.—Petition will shortly be presented to property owners of North Broadway for signatures asking City Council to order paving of that thoroughfare.

Fort Worth, Tex.—Paving of Pearl st. has been authorized.

Fort Worth, Tex.—City Commission has adopted order for paving of Peach st.

Galveston, Tex.—But two bids have been received to pave north side of Ave. J in area between 25th and 27th sts. They were submitted by Edward Dingh, \$4,622.72; and Kelso & Vautrin, \$4,490.24. On ground that they were too high, Commission ordered them rejected.

Richmond, Tex.—Bonds have been issued here for \$8,000 for improvement of city streets and sidewalks.

Lynchburg, Va.—Movement is being proposed whereby work of asphalt paving now being done along Rivermont ave. be extended at its completion in Rivermont section to connect with Catalpa Drive, which passes through Peakland. It is estimated that cost will approximate \$40,000 and would require cooperation of Campbell County authorities and promoters of Peakland.

Portsmouth, Va.—Mayor Hope has approved ordinance providing for \$275,000 paving bond issue and within short

while city will realize on sale of bonds. They have been purchased by Mayer-Deppe and Walter and firm of Weild-Roth & Co., both of Cincinnati.

Richmond, Va.—Council Committee on Streets has adopted unanimously motion offered by Alderman Powers directing City Engineer to push forward at once work of repaving Broad st.

Richmond, Va.—Committee has recommended to Council special appropriation of \$3,700 for smooth paving on Albemarle st., between Pine and Laurel sts.

Burlington, Vt.—Between \$25,000 and \$30,000 will be expended on highway improvements in Chittenden County.

Everett, Wash.—County Commissioners of King County, at Seattle, have decided to include in road to be built from \$3,000,000 bond issue to be voted upon by voters of that county, stretch of road in King County that would connect with proposed scenic highway over mountains through Stevens Pass.

Everett, Wash.—Board of County Commissioners have adopted resolution calling for submission of question of issuing \$1,500,000 worth of bonds for road building purposes to people of Snohomish County at general election November 5.

Seattle, Wash.—Resolutions and ordinances for various street improvements have been planned.

Spokane, Wash.—Plans for improvement of Everett ave., between Lidgerwood and Perry sts., have been approved by City Commissioners.

Spokane, Wash.—Plans for construction of sidewalks, cross walks and stairway on Eighth ave., between Substitute and F sts. have been approved by City Commissioners. Commissioners also approved plans for construction of sidewalks and cross walks on D st., between Substitute st. and Eighth ave.

Manitowoc, Wis.—Resolution has been passed to appropriate \$10,000 for county highways.

CONTRACTS AWARDED.

Burlingame, Cal.—Contracts for street work amounting to \$150,000 have been awarded by Board of Trustees. Successful bidder in each case was Western Paving Co., which has just entered this field. Principal improvement is paving of El Camino Real. This stretch will adjoin on north new State highway, which is being built from southern limits of South San Francisco, giving San Mateo County ten continuous miles of paved road. Other streets that are being improved are Oak Grove ave., Florabunda ave., Primrose rd., Ansel rd., Howard ave. and Douglas ave.

Los Angeles, Cal.—By Board of Public Works for following street improvements: First st. from Evergreen to east city boundary—Awarded to Barber Asphalt Paving Company at 17.2 cts. a square foot for asphalt paving; 35 cts. a lineal foot for cement curb; 26 cts. a square foot for vitrified block gutter; 41.1 cts. a square foot for granite block gutter; 11 cts. a square foot for sidewalk; \$1,883 storm drains and end walls at Rivera st.; \$428 for storm drain and end walls at Lorena st.; aggregate, \$28,204.18. Normandie ave., from Stoll to Temple—Awarded to O. L. Stevens at 35 cts. a lineal foot for cement curb; 11 1/4 cts. a square foot for sidewalk; aggregate, \$1,040.39. Stephenson ave., from Chicago to east city boundary—Awarded to Barber Asphalt Paving Co. at 17 cts. a square foot for asphalt paving; 37.5 cts. a lineal foot for cement curb; 26 cts. a square foot for vitrified block gutter; \$1,995 for pipe drains, catch basins and similar work; aggregate, \$68,045.39.

Hartford, Conn.—For construction of various sections of state road were awarded as follows: Town of Thompson, 16,885 lin. ft. of native macadam on the Thompson-Dudley road, to the Pierson Engineering & Construction Co., Bristol, Conn., \$3.42 per lin. ft. for macadam, \$3.95 for telford, \$1.50 for rubble

Colton, Cal.—Following are the bids opened for asphalt paving on 8th, 1st and J Sts.: (1) B. C. Nichols, Los Angeles; (2) Fairchild, Gilmore, Wilton Co., Los Angeles; (3) Barber Asphalt Paving Co., Los Angeles; (4) Los Angeles Paving Co., Inc., Los Angeles; (5) Bryant & Austin, Inc., 1650 Compton Ave., Los Angeles (awarded contract).

	(1)	(2)	(3)	(4)	(5)
168,453 sq. ft. asphalt pavement.....	\$0.162	\$0.163	\$0.169	\$0.164	\$0.16
18,813 sq. ft. cement concrete gutters...	0.15	0.15	0.149	0.14	0.15
948 sq. ft. cement concrete entrances.	0.15	0.15	0.149	0.14	0.15
369 1/2 lin. ft., 30x8, corr. iron culverts..	2.02	1.55	2.00	1.70	1.75
110 lin. ft., 30x6, corr. iron culverts..	2.00	1.50	2.00	2.00	1.75
54 lin. ft., 12, corr. iron culverts....	1.66	1.75	1.50	2.00	1.75
Totals	\$31,347	\$31,254	\$32,452	\$31,348	\$30,850

drain, 90 cts. per sq. yd. for cobble gutters, \$8 per cu. yd. for concrete walls, \$6 for masonry walls and \$5 for dry rubble walls. Town of Lisbon, 26,660 lin. ft. gravel construction on the Worcester Turnpike, to C. W. Tryon, Meriden, Conn., \$2.22 for gravel, \$2.97 for telford, \$1 for rubble drain, 85 cts. per sq. yd. for cobble gutters, \$9 per cu. yd. for concrete walls, \$6.50 for masonry walls, \$5 for dry rubble walls. Town of Woodbridge, a section of graded road on the Ansonia Turnpike, to E. F. Pardee, Bethany, Conn., for \$9,000; telford base, 75 cts. per lin. ft. extra; \$7.50 per cu. yd. for concrete walls, \$4.50 for masonry walls, \$3.50 for dry rubble walls. Town of Thomaston, 7,766 lin. ft. gravel on the Torrington Road to L. Longhi & Bro., Torrington, Conn., \$2.58 per lin. ft. for gravel, \$3.80 for telford, \$1.38 for rubble drain, \$8 per cu. yd. for concrete walls, \$7 for masonry walls, \$5 for dry rubble walls. Town of Litchfield, 12,770 lin. ft. of gravel on the Canaan Road, to Carlo Bianchi, Springfield, Mass., \$1.27 per lin. ft. for gravel, \$2.07 for telford, \$1.45 for rubble drain. Town of Griswold, 5,467 lin. ft. macadam and 9,773 lin. ft. gravel, to Jones & Porcario, Willimantic, Conn., for \$22,710, with \$1.25 per lin. ft. extra for telford.

Hartford, Conn.—Highway Commissioner James H. MacDonald has awarded contracts for construction of highways in towns as follows: Thomaston—For 7,766 ft. of gravel on Torrington road at \$2.58 per lin. ft., awarded to Louis Longhi & Brother, of Torrington. Griswold—For 5,467 ft. of macadam and 9,773 ft. of gravel on the Norwich and Worcester turnpike at \$2.10 for macadam and \$1.15 for gravel, to Jones & Porcario of Willimantic. Litchfield—For 12,775 ft. of gravel on the Canaan-Goshen-Litchfield road at \$1.27 per lin. ft. to Carlo Bianchi & Co., of South Framingham, Mass. Announcement of awarding of contract for construction of 26,660 ft. of gravel to C. W. Tryon, of Meriden, was formerly announced.

New Haven, Conn.—To Thomas F. Maher, 879 Orange st., for constructing sewers on English, Doeman and E. Pearl sts., for \$4,974. H. J. Kellogg is Asst. City Engr.

St. Petersburg, Fla.—For 48 blocks of brick paving to Georgia Engineering Co., Augusta, Ga., at \$1.54 per sq. yd. for paving, 44½ cts. a ft. for curbing and 25 cts. for grading. M. W. Spencer is City Engr. W. F. Divine is City Clk.

Douglas, Ga.—For construction of 20,300 ft. 6 to 15-in. terra-cotta pipe sewers with 40 manholes and 8 flush tanks, from plans of Arthur Pew, of Atlanta, to F. D. Harvey & Co., of Memphis, Tenn., for \$8,526.

Boise, Ida.—Lowest bid received for construction of sidewalk and curb improvement Dist. 30 was that of Idaho Hardware & Plumbing Co., Boise, Ida., at \$39,461.75. Other bids as follows: A. C. Sunton, Boise, Ida., \$49,292.25; White & Keith, Boise, Ida., \$46,042.75; J. Gustafson, Boise, Ida., \$44,886.62½; Shaffer & Clark, Boise, Ida., \$49,561.25; Keasel Constn. Co., Tacoma, Wash., \$42,352.75; Idaho Constn. Co., Boise, Ida., \$44,983.50; Maney Bros & Co., Boise, Ida., \$45,822.50; Parrott Bros., Baker, Ore., \$45,760.87; Hassam Paving Co., Spokane, Wash., \$46,538.25; Reliance Constn. Co., Portland, Ore., \$41,513.75; Gillis Constn. Co., Salt Lake City, Utah, \$45,822.50; Two Miracle Constn. Co., Kalispell Co., Mont., \$41,454.50.

Centralia, Ill.—To Hoeffken Bros., of Belleville paving contract in Centralia at \$49,989.

Monmouth, Ill.—By Bd. of Local Imps. for construction of all new paving in South D st. district to Burlington Constr. Co. at about \$15,400.

Taylorville, Ill.—For paving N. Webster and other streets, to John Cherry, of Jacksonville, for \$37,590.

Tuscola, Ill.—By Board Local Improvements, for paving as follows: P. J. Coggin Contr. Co., at \$6,443, for W. Main st., and to Breesee & Brown, at \$10,050, for Pine st.

Indianapolis, Ind.—Lowest bid for resurfacing with asphalt Georgia st., between Capital and Kentucky aves., was \$3.64 per lin. ft., submitted by Union Asphalt Constructing Co.

Richmond, Ind.—For 5-ft. cement walks to be constructed on South D st., from C & O Railroad to S. Fourth st., to Wolfe & Clements at 9 cts. a sq. ft. for walk, 9 cts. a sq. ft. for concrete, or 14 cts. a sq. ft. for vitrified brick crosswalks. Two other bids were received.

Lexington, Ky.—By Superintendent C. F. Estill and Road Committee of Fayette Fiscal Court to Chandler and Son of Versailles contract for repairing roads formerly awarded to C. C. Neale and by him

sub-let to other contractors and which were impossible of completion by reason of alleged breach of contract on part of Neale. Amount of rock to be spread and rolled aggregates 545 tons at price of \$1.30 per ton, which is 10 cts. per ton higher than Neale contract specified.

Lexington, Ky.—By Council, for construction of concrete sidewalks on both sides of North Upper st., from Short to Seventh st., to Central Constn. Co.

Louisville, Ky.—For paving Thirty-second st., from Broadway to Garland ave., with vitrified block to L. R. Figg Company by Board of Public Works. Job is original construction and estimated cost is \$14,125.

Shreveport, La.—By Caddo Police Court to R. E. Shisler, at approximately \$22,000 for building five miles of Harts Island road, one mile to be of macadam, and four miles of gravel construction.

Saco, Me.—By City Council, for paving of Main st., to M. McDonough Co.

Crosby, Minn.—To Peder Larson for repairing road between Crosby and Ironton.

Duluth, Minn.—Contractor P. McDonnell and General Contracting Company, of Minneapolis, were only bidders for paving of East Fourth st. between Twenty-third and Twenty-seventh aves. Flour City concern bid only on bitulithic, its figure being \$22,200.50. McDonnell bid \$20,414.75 on asphalt; \$22,030 on concrete with brick between tracks and sandstone curb, \$20,317.50 on concrete with concrete curb and brick between tracks, and \$18,479.70 on an all concrete pavement.

Duluth, Minn.—Board of Public Works has reported that contract for improvement of Twenty-seventh ave. west from Michigan st. to Fifth st. has been awarded to George R. King. Plain concrete with combined cement curb and gutter will be laid. Bid was \$16,226.98.

Asbury Park, N. J.—For paving Oak Bluff ave., to Holland & Donnelly Co., of Atlantic City, at \$1.55 per sq. yd., or total of about \$18,500.

Camden, N. J.—By Street Committee of Camden City Council for paving of Haddon ave., between tracks of Public Service Corporation from Line st. to city line with Belgian blocks on concrete foundation to Aaron Ward at \$2.81 per cu. yd. Total amounts to nearly \$50,000. Other bids were W. Penn Corson, \$3 per sq. yd.; John McFeeley, \$3.02 per sq. yd.; J. W. Carey, \$3.33 per sq. yd.; B. F. Sweeten & Son, \$3.15 per sq. yd.

Long Branch, N. J.—Bids for resurfacing asphalt streets of Long Branch as per specifications prepared by City Engineer have been opened by Board of Commissioners. Specifications call for laying of 68,000 cu. yds. On A and B bituminous concrete, the Newton Paving Co., of Trenton, is the lowest bidder. Company's bid is 79 and 77 cts. for guarantee and without guarantee respectively. On C bituminous concrete, P. J. McGovern is the lowest bidder. The Barber Asphalt Paving Co. is low on asphalt block, \$1.69 and \$1.63. J. F. Shanley & Co., of Newark, represented by Wilson Brackett, is low in sheet asphalt. The company's bid is \$1.07. The bids are as follows: Cleveland Trinidad Co., \$1.05 per sq. yd., 68,000, for bituminous concrete, grade A, guaranteed; \$1 same grade without guarantee; vitrified block, with guaranteed, \$1.85; without, \$1.85; sheet asphalt, with and without guarantee, \$1.18. Joseph Finn, the only local bidder, figured \$1.76 on vitrified block. His bid for only 28,000 sq. yds. was \$1.80. He also figured on re-setting of the curbing, stone headers, cost of iron gutters, blue stone curb and concrete. P. J. McGovern was high at \$1.18 on bituminous concrete. Without guarantee he figured \$1.10. His figures on bituminous concrete grade A was \$1.18 for 40,000 yds. with guarantee and \$1.10 without guarantee. Grade B was figured at \$1.12 and \$1.05; grade C was quoted at \$1.30 and \$1.20; grade D at \$1.60 and \$1.50; asphalt block was quoted at \$1.90 and \$1.80; vitrified block, \$1.82 and \$1.80; sheet asphalt, \$1.29 and \$1.20. J. F. Shanley figured 98 and 93 cts. on bituminous concrete. The same figure applied to grade B, whether 68,000 or 40,000 yds. were laid. Vitrified block, \$2.00 and \$1.96; sheet asphalt, \$1.12 and \$1.07. The Hastings Paving Co. quoted prices only on asphalt blocks, \$1.74 and \$1.68. These figures were with or without a guarantee. Barber Asphalt Paving Co. quoted \$1.69 and \$1.63. Continental Paving Works Co., 98 and 95 cts. for bituminous concrete. For only 40,000 yds., \$1.02 and 99 cts.; sheet asphalt, \$1.14 and \$1.11; \$1.18 and \$1.15. Newton Paving Co.,

Trenton, 79 and 77 cts. for either amount of bituminous concrete. The same figures were quoted on both grades A and B. Vitrified block, \$2.12; sheet asphalt, \$1.20 and \$1.16; for the lesser number of sq. yds., \$1.20 and \$1.18. Standard Bitulithic Co. figured \$1.46 on bitulithic concrete grade C, and \$1.56 on grade D; vitrified block, \$2.10.

Oaklyn, N. J.—By Borough Council, for laying about half a mile of cement sidewalks, to Contractor Le Cato.

Passaic, N. J.—By city, for improvement of Waverly st., from Van Houten ave. to southerly terminus of Waverly st., and of Blaine st., to De Vogel Contr. Co., at \$1,645 and \$3,336 respectively. Thos. R. Watson, City Clerk.

Passaic, N. J.—By city, for laying of asphalt-bound macadam on Oak st., between Main ave. and Hammond ave., to Union Building & Constn. Co., at \$1,969.24. T. R. Watson, City Clerk.

Roselle Park, N. J.—For constructing flagstone sidewalks in Union ave., Westfield ave., Sherman ave. and Grant ave., to Hans Satter & Son, of Perth Amboy, at rate of 75 cts. a lin. ft.

Brooklyn, N. Y.—For regulating and repaving with granite Grade 2, on a concrete foundation, Myrtle ave., from Hudson to Vanderbilt aves., to Kingsland Constn. Co., 165 Hooper st., Brooklyn, as follows: 8,040 sq. yds. granite pavement, Grade 2, with tar and gravel joints, \$2.74; 30 sq. yds. old stone pavement, relaid, 50 cts.; 1,385 cu. yds. concrete for pavement foundation, outside railroad area, \$5; 5,210 lin. ft. new curbing set in concrete, \$1.15; 180 lin. ft. old curb, reset in concrete, \$1.15; 1,310 sq. ft. new granite bridge stones, outside railroad area, 75 cts.; 300 sq. ft. new granite bridge stones, within railroad area, 75 cts.; 250 sq. ft. old bridge stones, re-jointed and relaid, 40 cts.; total, \$36,476. Other bidders: John H. Hogan, 367 Fulton st., Brooklyn, \$36,631, and Norton & Gorman Contr. Co., 301 Douglass st., Brooklyn, \$37,278.

Cohoes, N. Y.—By City Council, for paving Mann ave., to T. F. Grattan Co., at \$2.60 for classified brick at \$2.60 per sq. yd.

Newburgh, N. Y.—Mayor Corwin has signed resolution awarding contract for work to Warren Bros. Co., of Boston, owners of bitulithic patents.

Rochester, N. Y.—By Board of Contract and Supply for public improvements as follows: Medina stone pavement and sewer in Cataract st., to Nicolo Desiderio for \$3,444.20; new walks in Madison st., to H. Schoenfelt for \$132.50; sewer and macadam pavement in Colby st., to F. V. Brotsch & Hempel for \$2,755.50.

Schenectady, N. Y.—Board of Contract and Supply has opened bids for grading of Park st. Bruno Tempoly, of Schenectady, bid 49 cts. a cu. yd. on excavating 1,300 cu. yds. of earth; Miller Bros., Schenectady, bid 43 cts. a cu. yd., and A. G. Davis, Schenectady, bid 45 cts. Contract was awarded to Miller Bros. Their total for work will amount to \$559.

Syracuse, N. Y.—On contract for laying 11,200 sq. ft. of cement sidewalks in Washington Park, Caspito Lamanna was lowest bidder at \$952.

Syracuse, N. Y.—To Warner-Quinlan Asphalt Co., at \$27,989.90, for resurfacing James st., from North Salina st. to east line of old Wieting property. Also to Warner-Quinlan Asphalt Co., at \$7,363.10, for constructing asphalt pavement in Tremont st., from Tallman to Oxford sts.

Cincinnati, O.—By County Commissioners of Hamilton Co. for improvement of Clough Creek Pike between Batavia Pike and Bogart Road to Van Camp Bros. at their bid of \$10,746.

Portsmouth, O.—By Board Control, for paving Grandview and Home aves., and Logan and Nineteenth sts., with gravel, to Monroe & Son, for \$23,272.

Salem, O.—Bids for repair of Painter rd. have been received by Perry Township Trustees. There was but one bid received, Wm. McLane, of Lisbon, for amount of \$2,816, and contract was awarded to him. Work will begin at once.

Wellsville, O.—For paving Center ave. to Patterson & Grafton, at \$14,700.

Youngstown, O.—By Board of Control to Turner & Olson at \$11,660, for paving Saranac ave.

Erie, Pa.—By city, for construction as follows: Park ave. south, from Liberty to Plum st., and Plum st., from Park ave. south to West Sixth st., to John McCormick & Son, for mixed asphalt, at \$1.20. California straight was quoted at \$1.18. Mayer Bros. bid \$1.24, and J. & M. Doyle bid \$1.35. Fourteenth st., from

Holland to German sts., to John McCormick & Son, for asphalt mixture, at \$1.35. Mayer Bros. bid \$1.46, and Doyles \$1.40. Select Councilman Gross directed that the German to Parade st. section of the same street be advertised for award next week. Ash st., from Seventh to Eighth sts., to Mayer Bros. Constn. Co., who bid on mixed asphalt, \$1.35. McCormicks bid \$1.35, but were higher on the incidental work. Doyles bid \$1.45 for asphalt and \$1.60 for brick.

York, Pa.—Central Paving & Constn. Co., of Harrisburg, to repair asphalt paving on West York ave., between Philadelphia st. and railroad, and work will be done during latter part of this week in order that highway may be in shape for York County Fair.

Knoxville, Tenn.—By City Commissioners for macadamizing Oklahoma Ave., to Peters & Gibson, at 88 cts. per sq. yd. Bids for paving Forest ave. were rejected because of insufficient funds.

San Antonio, Tex.—City Council Finance and Street Committees have purchased six sprinklers and two street flushers for use of Garbage Department. Bid of Jack W. Neal for six sprinklers at \$2,088.24, and two flushers at \$1,795, was accepted. Equipment will be of Studebaker type.

Salt Lake City, Utah.—By City Commission to G. A. Heman for paving East Second South st., between Tenth East and Twelfth East.

Huntington, W. Va.—For paving of Solis ave., from Twenty-eighth to Twenty-sixth st., to Harrison & Dean.

Morgantown, W. Va.—By County Court, to Pietro Bros., for paving of Sabraton ave. Their bid was \$8,155.50. The other bids and bidders were: J. P. Rossati, \$9,978; Carlo Norelli, \$8,234; Taylor & Hansford, \$10,561; A. M. Lucas & Co., \$8,962.50; A. F. Alfieri, \$8,866.50; H. J. Zevely, \$8,786.

Goldendale, Wash.—By Town Council, for 10 blocks of paving, to the J. F. Hill Paving Co., of Chicago, Ill., for \$21,891.

Spokane, Wash.—By City Council to Inland Empire Hassam Paving Co., at \$31,894, for paving Ninth and Tenth aves., Grand and Rockwood boulevards, with Spokane bituminous No. 2.

SEWERAGE

San Francisco, Cal.—Finance Committee of Supervisors has sanctioned commencement of proceedings by Board of Public Works for construction of new sewer in Fifth st., from Folsom to channel, cost of which is estimated at \$100,000.

Grayslake, Ill.—Installation of sewerage system is being considered.

Rock Island, Ill.—Bids may shortly be asked for constructing sewers in eastern section of Seventh Ward. Estimated cost about \$25,000.

Des Moines, Ia.—Fred N. Carss, City Engineer, is preparing plans for installation of sewer system in northwest sections of city.

Indianapolis, Ind.—Plans and specifications for experimental sewerage disposal plan will shortly be ready, and bids will be asked for.

Lexington, Ky.—Ordinance providing for submission of proposition of bond issue of \$200,000 to build main sanitary sewer, purification plant and storm sewerage system, to people at November election has been passed.

Bangor, Me.—Alderman Hathorn has moved that Committee on Sewers present order calling for survey by engineer of route of trunk line sewer in or near route of Tannery Brook.

Duluth, Minn.—City Engineer has been directed to prepare plans for storm sewer to take care of water above Tenth st. and between Twenty-fourth ave. west and Piedmont ave.

Pine City, Minn.—It is proposed to stall sewer system. Bonds for same have been voted.

Ralston, Neb.—Plans have been completed for sewerage system.

Atlantic City, N. J.—Extension of lateral drainage system, to cover most of crosstown avenues, between Rhode Island and Georgia aves., to extend surface drainage over to Pacific ave., has been discussed by Commissioners and plans to expend \$170,000 for purpose were formally sanctioned and City Engineer Hackney was authorized to prepare plans and specifications while the Commission is to pass ordinances requisite for raising money by bond issue.

Atlantic City, N. J.—Total net cost of new drainage canal and lateral drain system is set forth at \$908,986 according to report of supervising engineers.

Camden, N. J.—City will construct sewers or drains in and along Butler st., Walnut st. and Woodland ave. A. L. Sayers is Street Commissioner.

Camden, N. J.—Ordinance has been passed authorizing construction of sewers, culverts or drains in and along Morgan st., from Seventh st. west to Master st.

Newark, N. J.—Deeming that bids for construction of Section 8 of Passaic Valley sewer were too high, Passaic Valley Sewerage Commission has decided to divide this section into two parts and re-advertise for bids. Three bids were received, lowest being that of Bell, Ross Co., of New York, of \$452,214. Other bidders were Leo E. Kelly, Inc., of New York, \$527,595, and Fraser, Brace Co., of New York, \$597,640. Section 8 is entirely in Newark and covers length of 6,700 ft. It begins in Ogden st., near Gouverneur st., runs north through Ogden st. to point near Erie Depot and then proceeds through Third ave. to Passaic st., running from there through lots back of Mt. Pleasant Cemetery and through Riverside ave. to point near Grafton ave., where it joins Section 9.

Paterson, N. J.—Board of Public Works has authorized construction of sewers in various streets.

Roosevelt, N. J.—Borough Engineer has been instructed to submit necessary plans and specifications for sewer and septic tank to State Board of Health for approval.

South Orange, N. J.—Resolution has been adopted for construction of sewers in various streets. E. R. Arcularius, Township Clerk.

Mamaroneck, N. Y.—Plans for sewer disposal works for village of Mamaroneck, executed by Hering & Gregory, of New York, have been approved by Board of Trustees of village, and are now before State Board of Health and Conservation Commission for their approval. Imhoff tank system will be used and plant will be constructed on Harbor Island. Trunk sewers will be extended from three temporary outlets in harbor to disposal works on island. It is estimated that cost of constructing disposal works will be \$33,000 and cost of carrying three branch trunk sewers across harbor to connect with outlet will bring cost close to \$100,000.

Newburgh, N. Y.—Proposition is being discussed for construction and extension of trunk sewer in Fullerton ave., from Third st. north to Gidney ave.

Oneida, N. Y.—Board of Public Works, after considering sewer applications from property owners along Lake st., above Verona st., has passed resolution permitting, with concurrence of Common Council, extension of authorized Lake st. sewer from Vernon st.

Columbus, O.—Governor Harmon has signed order of State Board of Health authorizing expenditure of \$2,000,000 for sewerage disposal plant for city of Cleveland, on outskirts of village of Newburg.

Hamilton, O.—Resolution has been passed instructing engineer to make estimate of cost of storm sewer on Greenwood ave., from Miami to Pine st.; on Poplar and Linn to Reservoir, and on Reservoir, from Pine to Ninth st.

Coquille, Ore.—It is said that bids will be received for about 20 blocks of sewers.

Meadville, Pa.—Bill for constructing sewer on South Cottage st. to connect with Clark rd. sewer has passed third and final reading.

Reading, Pa.—Centrifugal pumps will be installed at disposal plant.

Providence, R. I.—Resolution has been passed ordering sewer in Irving ave.

Clarksville, Tex.—Plans have been approved for municipal sewerage system for this city, to cost \$25,000. Bids are being advertised for and on October 14 contract covering construction of system will be awarded.

San Benito, Tex.—City of San Benito has practically decided to supervise construction of its own sewerage system, for which bonds to amount of \$30,000 have been issued.

Temple, Tex.—Municipal ownership of sanitary sewer system will be submitted shortly to vote of people.

Waco, Tex.—Members of City Commission have adopted resolution instructing City Engineer and Street Commissioner to proceed at once with completion of Provident Heights sewer.

Ashland, Va.—At meeting of Town Council ordinance was introduced for purpose of submitting to people of Ashland plan for issuance of bonds, proceeds of which are to be used for installing water and sewerage system for town of Ashland. Provisions of or-

dinance require submitting proposition to voters.

Colonial Beach, Va.—New sewer system will be installed.

Racine, Wis.—Common Council has adopted resolution to submit to vote proposition to install trunk sewer systems at estimated cost of \$185,000.

CONTRACTS AWARDED.

Hartford, Conn.—To construct pumping station in connection with East Side sewer interceptor to H. Wales Lines Co., Meriden, Conn., at \$33,000.

Muncie, Ind.—To William Birch, by Board of Works, for construction of local sewer in Fifth st., from Monroe to Hackley st. His bid was in the sum of \$1,662.50. Lyons & Delaney offered bid of \$1,665.

Baltimore, Md.—To construct sewers under Contract No. 98 by Board of Awards to James Ferry & Sons, 2111 Madison Ave., Baltimore, at \$39,846.

Malden, Mass.—By Street and Water Commission, for construction of Broadway end of Maplewood surface drain work to Charles R. Gow Co., at \$6,782.50. Other bids as follows: Coleman Bros., \$8,427.50; A. M. Cusack, \$7,242.50; George M. Byrne, \$7,097.

Duluth, Minn.—Johnson & Erickson were low bidders on sanitary sewer in Twenty-seventh ave. west between Fifth and Seventh sts. Their figure was \$818.78.

Caldwell, N. J.—To Donato Fusco, of Montclair, and R. C. McManus, of Caldwell, for constructing 15 miles of sewers and disposal beds; total cost about \$83,750.

Cranford, N. J.—By Township Committee, for sewer in North ave., E., to W. J. McCloud Co., of Elizabeth, for \$5,020.

Brooklyn, N. Y.—For furnishing material and installing sewer lines and outside tanks, together with all alterations and other work incidental thereto, at the Kingston Ave. Hospital, Kingston ave. and Fenimore st., Borough of Brooklyn, to Altrades Building Repair Co., 34 W. Thirty-third st., New York City, for \$15,997.

Rochester, N. Y.—By Board of Contract and Supply, for construction of sewers as follows: Post ave. sewer, to John Petrossi Co., at \$1,030.80; Hazel st. sewer, to Passero & Petrossi, \$2,285.

Cincinnati, O.—By County Commissioners, for improving Clough Creek Pike, to Van Camp Bros., for \$10,746.

Springfield, O.—By Director Public Service, Springfield, for constructing Indian Run sewer, including 2,200 lin. ft. 12 by 6 ft., 2,119 lin. ft. 10 ft. by 5 ft., 6,725 lin. ft. 60-in., 2,909 lin. ft. 42-in. reinforced concrete sewer, and 3,000 lin. ft. 12-in. vitrified pipe sewer, 140 catch basins, 51 manholes, 9,640 cu. yds. rock excavation, to P. J. Caffrey, for \$137,998.

Urbana, O.—Twelve bids for work of installing sewerage system in Urbana have been opened by Auditor H. M. Crow. Lowest bid was that of Boyd & Cook, of Dayton, it being \$78,662.86. Bids ranged from this amount to \$107,000. Three low bids were taken under consideration by Board of Control. These bids were Boyd & Cook, \$78,662.86; F. R. Stone, of Lima, \$79,744.88, and McDowell & Son, of Cleveland, \$90,000.

Erie, Pa.—By city, for sewer construction as follows: Storm water drainage sewer in Second and Walnut sts., went to Joseph McCormick & Bro., on a bid of \$1 a ft. for the 18-in. main. Doyles bid \$1.60. Sanitary sewer in Chestnut st., from Twenty-fifth st. south, 300 ft., was awarded to Clements Wolfran at \$1.08 a ft. Competitive bids by McCormicks were \$1.15, and by F. G. Diefendorf, \$1.49. Sewers in Hess ave., from Ninth to Eleventh sts., went to F. G. Diefendorf on a bid of \$1.24 a ft. Edward Driscoll asked \$1.26; Clements Wolfran, \$1.65, and McCormicks, \$1.70.

Wilkes-Barre, Pa.—Sewer Committee of City Council has let contracts for sewers throughout city provided for in \$350,000 loan. Forty streets will be sewered at cost of \$95,000. For Division No. 1 contract was awarded to George N. McAlarney, at \$3,980.57. Other bids were as follows: Patton Clay Co., \$4,782.23; J. E. Paterson, \$4,368.66; Fred W. Frantz, \$4,475.51. Same contractor was awarded contract for Division No. 2, at \$9,700.76. Other bids as follows: Patton Clay Co., \$11,301.26; J. E. Patterson, \$10,498.57; Fred W. Frantz, \$10,501.40. Bids for excavation as follows: No. 1—Surnow & Gates, \$32,706.47; D. M. Rosser Co., \$44,021.16; Bown Constn. Co., \$54,156.23; R. M. Rosser, \$32,267.35; Davis & Parry, \$48,466.56; C. R. Reilly, \$32,699; Penn

Sewer Co., \$22,412.07. No. 2—D. M. Rosser, \$97,854.57; Bown Constn. Co., \$130,803.81; R. M. Rosser, \$68,306.79; C. M. Reilly, \$48,980.59; Penn Sewer Co., \$50,732.97. R. M. Rosser was awarded the contract for excavation under Division No. 1 and C. M. Reilly under Division No. 2.

Norfolk, Va.—By Board of Control to Louis Lawson for building Goff st. drain, in Huntersville, for \$9,500.

Warwood, W. Va.—To construct about two miles of sewers to Stringer & Springer, Wheeling, W. Va., at about \$9,300.

Seattle, Wash.—To construct sewers in Brooklyn ave. and other streets by Board of Public Works to International Dredging Co., Central Building, Seattle, at \$43,589.

Spokane, Wash.—City Council on recommendation of Commissioner D. C. Coates, has awarded contract for laying sewer in alley between West Oval and Post st., Waverly place to Park place, to McMillan & Shaughnessy, lowest bidders. Contract price is \$650, while estimate was \$800.

WATER SUPPLY

Glendale, Cal.—In order to solve water question and provide adequate fire protection, proposed bond issue of \$250,000 will be put before people at the polls Oct. 29. If fund is secured \$225,000 will be expended for municipal water plant; \$20,000 for additional fire protection and \$5,000 for street building machinery.

Los Angeles, Cal.—Voters of Los Angeles will have opportunity at general election, Nov. 5, to express their approval or disapproval of plan of Public Service Commission for distributing Owens River Aqueduct water.

Pasadena, Cal.—Acting on recommendation of Public Service Commission Los Angeles City Council has formally approved Commission's plan for distribution of Owens River surplus water to places outside Los Angeles. Plan includes \$5,000,000 conduit by way of La Canada, Pasadena and Monrovia to San Dimas and Glendora. At same time Los Angeles Council authorized submission of plan to vote of people of their city at general election November 3.

San Francisco, Cal.—Board of Supervisors has pledged itself to early extension of water delivery mains in city, irrespective of purchase of Spring Valley plant.

Venice, Cal.—Abbot Kinney has made offer to Council of Santa Monica to install salt water fire system in that city. All fire mains in Venice are filled with salt water, with probably heaviest water pressure in United States. Council of Santa Monica will make thorough investigation into merits of system.

Crescent City, Fla.—Mayor Graham has called meeting of citizens to consider feasibility of putting in water and electric plant.

Grayslake, Ill.—Installation of waterworks system is being considered.

Joliet, Ill.—City is considering laying of 12-in. main to Plainfield Springs, distance of 8½ miles; estimated cost, \$60,000.

Nashville, Ill.—Plans have been prepared for construction of water works system.

Piper City, Ill.—C. F. Helman, County Engineer, is preparing plans for new water works system.

South Bend, Ind.—Bids for rebuilding of Leeper Park Water Works pumping station will be advertised for, as a result of action of Board of Public Works. Board decided it would open bids in two weeks. Work is to cost approximately \$25,000, and is part of plans of Burns & McDonnell, consulting engineers, of Kansas City, Mo., for \$200,000 worth of improvements to department.

Donaldsville, La.—Municipal Light and Water Commission has called for proposals for furnishing commission with funds approximating \$40,000, to be used in installing machinery in water plant.

Longmeadow, Mass.—Purchase or about 300 meters is being considered, also extension of water mains.

Lynn, Mass.—City will probably seek to negotiate loan of \$75,000 for improvement of water service.

Wilbraham, Mass.—Engineer will be employed to prepare plans and estimates for installation of water works system.

Ecorse, Mich.—Village Council has had plans prepared for extension of water system. Estimated cost, \$9,500.

Hancock, Mich.—Improvements to water system has been authorized, also purchase of 50 meters.

Iron River, Mich.—City has voted \$15,000 bond issue for extension of water works system.

Chisholm, Minn.—Water and Light Board has decided to lay about 1,500 ft. of water mains before it freezes up and will begin work at once. Two blocks of mains go to Park addition, one block to Hayes and Hackett addition, one block to Maple st., at west end, and few short ends in other places. Board will arrange purchase of new high power pump and bids will be called for in very near future on pump.

Delano, Minn.—Election may shortly be held for voting on bond issue for waterworks system.

Palmyra, Mo.—Bonds for \$6,000 were voted to improve water system and electric-light plant.

Oakland, Neb.—Water mains will be extended.

Railston, Neb.—Plans have been completed for waterworks system.

Atlantic City, N. J.—Ordinance has been passed providing for extensions and improvements to water works of Atlantic City by construction of water main beneath Arctic ave., from Missouri to Main ave., together with stand pipe of at least thirty-five feet in diameter at point east of Connecticut ave. D. H. V. Bell, City Clerk.

Bridgeton, N. J.—New water plant of Bridgeton will have opportunity to drawing upon supply of more than 30,000 gallons daily, as shown by tests

made in new water-shed by engineer.

Chatham, N. J.—By vote of 196 to 86 proposition to bond borough for \$35,000 for addition to water and light plant and purchase of additional water lands has been carried here at special election.

Dover, N. J.—At joint meeting of Mayor and Council and Board of Water Commissioners latter body was empowered to purchase steam pumping plant at approximate cost of \$8,600.

Elizabeth, N. J.—Acquisition of municipal water plant is being considered.

Gloucester, N. J.—Ordinance authorizing bond issue of \$10,000 for improvements at water works has been returned by Mayor Lincoln with his approval.

Pitman, N. J.—The Water and Lights Committee of the Pitman Borough Council will shortly report on municipal ownership question. In all probability citizens will be left to decide matter at special election.

Somers' Point, N. J.—Municipal water plant to cost \$25,000 is contemplated.

Buffalo, N. Y.—The Central National Bank has been awarded \$300,000 worth of water bonds.

Fulton, N. Y.—Common Council has ordered readvertisement of \$25,000 issue of water bonds for extending of mains to increase water supply, which were previously awarded to E. H. Rollin & Son, of Boston, Mass., but not accepted.

Waterford, N. Y.—Water Commissioners have decided to submit to people following propositions: First—To purchase property rights, franchises, plant and equipment of Waterford Water Works Co., at price not exceeding \$92,500, and to construct filtration plant in connection therewith at cost not exceeding \$50,000, making total cost of plant, including new filtration plant, \$142,500. Second—To purchase property rights, franchises, plant and equipment of Water Works Company at price not exceeding \$92,500, and to construct reservoir at Oil Kill Creek and gravity system to pumping station at cost not to exceed \$75,000, without filtration, which would make total cost of this system, without cost of lands necessarily to be acquired, \$167,500.

Hamilton, O.—City Council is considering question of city's future water supply.

Kenton, O.—Bond issue of \$16,000 has been authorized for purchase of meters.

Lima, O.—Bond issue of \$100,000 has been voted for water works improvements.

Beaverton, Ore.—Plans are being prepared for waterworks system.

Milwaukee, Ore.—Election will shortly be called to vote on bond issue of \$20,000 for installation of municipal water system.

Sharpsville, Pa.—Purchase of new pumps is being considered by Council.

Camden, S. C.—City will construct municipal water works plant.

Hurley, S. D.—Bonds in sum of \$6,000 have been voted for installing new pumping plant and extension of mains.

Tonkawa, Okla.—By city for construction of water works improvements to Filke & Lantry, Tulsa, Okla., at \$18,197. Burns & McDonnell, Engrs., Kansas City, Mo. Itemized bids as follows—(1) Jas. A. Pringle, Carthage, Mo.; (2) R. E. Patterson, Tonkawa, Okla.; (3) Heaney Const. Co., Enid, Okla.; (4) Tonkawa Const. Co., Tonkawa, Okla.; (5) N. S. Sherman, Oklahoma City, Okla.; (6) Don A. Talbert, Ada, Okla.; (7) Connelly Const. Co., El Reno, Okla.; (8) Filke & Lantry, Tulsa, Okla.:

Quantity.	Specification.	Estimate amount.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
11,700 lin. ft.	8" c.-l. pipe in S.	\$0.785	\$0.68	\$0.74	\$0.63	\$0.69	\$0.71	\$0.70	\$0.68	\$0.70
60 lin. ft.	8" c.-l. pipe in S.									
1,895 lin. ft.	6" c.-l. pipe in city	1.068	.94	.99	...	.94	...	.95	.98	.95
4,630 lin. ft.	4" c.-l. pipe in city	.785	.71	.75	.63	.67	.72	.68	.67	.70
230 lin. ft.	2" galvanized pipe	.55	.49	.53	.45	.50	.49	.48	.50	.48
335 ft.	relaying 3" galvanized pipe	.28	.24	.26	.21	.27	.20	.20	.22	.30
665 ft.	relaying 2" galvanized pipe	.20	.12	.16	.10	.15	.10	.12	.15	.35
200 ft.	relaying 1½" galvanized pipe	.20	.12	.16	.10	.15	.08	.10	.14	.30
9 hydrants	furn. & setting	29.00	.12	.16	.10	.15	.08	.10	.14	.25
4 6-in. valves	and boxes...	17.50	26.00	28.50	28.00	26.00	27.50	25.00	32.00	30.00
5 4-in. valves	and boxes...	13.50	15.00	14.50	16.50	15.00	15.00	14.00	20.00	15.00
1 3-in. valve	and box...	10.00	11.00	10.50	12.25	11.00	10.50	11.00	14.75	11.00
2 2-in. valves	and boxes...	7.50	9.00	9.50	11.00	9.00	10.00	9.00	12.50	10.00
12 wet connections	...	10.00	8.00	8.00	8.00	8.00	8.00	7.00	10.00	6.00
4,140 lbs.	No. 8 T. B. W. P. copper wire	.27	10.00	10.00	11.00	10.00	9.00	10.00	20.00	10.00
100 30-in. poles	equipped and set	7.50	.25	.25	.23	.26	.24	.26	.28	.27
36 iron pole line lighting	arresters	5.00	9.00	7.25	11.00	10.00	9.90	9.50	10.00	12.00
12 guy anchors	in place...	10.00	3.50	4.90	6.50	5.00	4.50	4.00	5.00	3.50
			3.00	9.00	5.00	3.00	3.00	4.00	3.50	3.00
Lump Sum Bid.....		\$20,074.33	\$18,638.75	\$18,936.85	\$18,645.00	\$18,400.02	\$18,377.00	\$18,500.00	\$18,485.25	\$18,197.00

(1) Extra for Ludlow hydrants, \$4 each; 35 or 50 H. P. motor. (2) Add \$50 for 50 H. P. motor. (3) Add \$60 for 50 H. P. motor. (4) 35 or 50 H. P. motor. (5) Add \$60 for 50 H. P. motor. (6) 35 or 50 H. P. motor. (7) Add \$75 for 50 H. P. motor. (8) Add \$60 for 50 H. P. motor.

Big Springs, Tex.—Town is considering installation of water system to cost \$50,000.

Ogden, Utah.—Water mains have been ordered laid on Twenty-ninth st., between Adams and Lincoln aves., on Harrison ave., between Twenty-sixth and Twenty-seventh sts., and on Taylor ave., between Twenty-fourth and Twenty-fifth sts.

Lynchburg, Va.—George W. Fuller, a water expert, is investigating conditions in connection with city water supply from Pedlar River.

Darlington, Wis.—Bond issue of \$8,000 has been authorized for installation of waterworks system.

CONTRACTS AWARDED.

Bridgeport, Ill.—To install water system to H. H. Hall, East St. Louis, Ill., at \$42,479. Plans and specifications were prepared by J. S. Spiker, Consult. Engr., Vincennes, Ind.

Mishawaka, Ind.—By City as follows: Laying mains, etc., to William Rosewarne, Mishawaka, at \$10,500; furnishing pumps, etc., to the Platt Iron Works, Dayton, Ohio, at \$10,000.

South Bend, Ind.—To construct reinforced concrete reservoir with capacity of 6,000,000 gals., to C. H. Defrees, South Bend, at \$51,876.

Storm Lake, Ia.—By City Council, to Pittsburgh Filter Co., of Pittsburgh, Pa., for construction of filters at cost of \$9,500.

Dehance, Ia.—By Council for waterworks system to Alamo Engine and Supply Company of Omaha for approximately \$8,000. Entire system, except power house, will be built by above company and will supply every part of town.

Boston, Mass.—To lay water pipe in Dorchester, West Roxbury and Hyde Park, to M. De Sisto & Co., Boston, at \$10,152. Other bids were: James D. Kelly, \$10,352; Louis Balboni, \$11,020; J. H. Ferguson, \$11,495; D. E. Lynch, \$14,825.

Westboro, Mass.—To construct conduits and overflow at new reservoir by Board of Water Commissioners, to R. H. Newell, Uxbridge, Mass., at \$5,076.

Detroit, Mich.—To lay water mains and place hydrants on university campus to Schumaker & Backus, Detroit, at \$30,997.

Grand Haven, Mich.—To construct two steel reservoirs for water system to Rodgers Boiler & Burner Co., Muskegon, Mich., at \$10,900.

Grand Rapids, Mich.—To lay high pressure water main across Grand River, from Monroe ave. to Front st., to Vander Weele Bros., Grand Rapids, at \$5,693.

Baltimore, Md.—Lane Bros. Co., of Altavista, Va., was awarded contract to construct filtration plant for reservoir of city of Baltimore. Contract price is half million dollars.

Skillman, N. J.—To extend water system to McGovern Contracting Co., Trenton, N. J., at \$61,143.

Hornell, N. Y.—By Board of Public Works, for laying 20-in. pipe line from new storage reservoir to old, to Fred Gray, at \$12,900.

New York, N. Y.—To reconstruct and improve old Croton Aqueduct, to William Horns Co., 71 W. 132d st., New York, at \$111,710.

Otisville, N. Y.—For furnishing material and constructing gate house and to furnish and lay 12-in. c.-l. pipe water line to conduct water from present Bear Swamp Reservoir to buildings upon grounds of Tuberculosis Sanatorium at Otisville, to William Horne Co., 71 W. 132d st., New York City, for \$26,179.

Nottingham, O.—To furnish water pipe, specials, etc., for year ending Dec. 31, 1912, to the U. S. Cast Iron Pipe & Foundry Co., Cleveland, O.

Youngstown, O.—To construct stand-pipe on South Side, to Chicago Bridge & Iron Co., Chicago, Ill., at \$35,960.

Hooker, Okla.—To install water system and an electric-light plant to Kennedy & Fleming, State National Bank Bldg., Oklahoma City, Okla.

Cheraw, S. C.—For installing water and sewer systems as follows: Pumping station, reservoirs, auxiliary pumping station and filter plant, to Tucker & Laxton, Charlotte, N. C.; laying water and sewer pipe, about ten miles, to the Dixie Construction Co., Burlington, N. C.; furnishing pumping machinery, to Thomas B. Whitted, Charlotte, N. C.; furnishing pipe, to the Glamorgan Pipe & Foundry Co., Lynchburg, Va.; furnishing hydrants and valves, to the Columbian Iron Works, Chattanooga, Tenn.; tower and tank, to the Des Moines Bridge & Iron Co., Des Moines, Iowa. To-

tal cost, \$93,000. Gilbert C. White, Charlotte, N. C., is Consult. Engr.

Philadelphia, Pa.—By Board of Public Works, as follows: Contract 206, filter cleaning apparatus for Belmont filter plant, to Blaisdell Filtration Co., 90 West st., New York, \$15,000; Contract 207, metal doors, to George B. Clopp, 3717 Filbert st., Philadelphia, \$1,284; Contract 208, repairs to wharf at Torresdale filter plant, to Armstrong & Latta, 532 Land Title Bldg., Philadelphia, \$800; Contract 209, steel sash for monitor pumping station, to David Lupton's Sons Co., Allegheny ave., and Tulip, Philadelphia, \$1,980, and Contract 210, cement, sand, etc., for Queen's Lane station, to George A. Sinn (Frankford), Philadelphia, \$2,832, and Knickerbocker Lime Co., Twenty-third and Vine sts., Philadelphia, \$2,813. Carlton E. Davis, Chief of Water Bureau.

Leavenworth, Wash.—To install water system to Quigg & Seaman, Wenatchee, Wash., at \$39,500. Contract includes installation of five miles of supply line and five miles of distributing mains.

LIGHTING AND POWER

Decatur, Ala.—Installation of great white way is being favorably considered.

Alhambra, Cal.—Preparing for installation of Alhambra's portion of "lighted way." City Council has asked for bids for carload of 10-in. and 16-in. globes.

Crescent City, Fla.—Mayor Graham has called meeting of citizens to consider feasibility of putting in electric and water plant.

Chicago, Ill.—Dearborn st., from South Water st. to Polk st. railway station, will be first street in "great white way" project of city to light entire loop district with flaming arc lights.

Cedar Falls, Ia.—Expert from Chicago has made his report to City Council as to cost of lighting plant for city, and he has estimated that it would require \$30,000 for plant that would furnish light for city and \$50,000 would be required for plant that would furnish light for both city and commercial purposes.

Lowell, Mass.—Commissioner George H. Brown has reached agreement with Supt. Hunnewell of Lowell Electric Light Corporation, and result will be that if this matter receives approval of municipal council, city of Lowell will have great white way. Installing of this new white way will cost between \$50,000 and \$60,000 and entire burden of this expense will be borne by Electric Light Corporation.

Lowell, Mass.—The Lowell Electric Light Corporation has agreed to install proposed ornamental street lighting system at its own expense, extending from City Hall to railroad station in Middlesex st.

Frankenmuth, Mich.—Trustees of village are discussing proposed electric lighting plant.

Chisholm, Minn.—City is considering purchase of lighting plant.

Hibbing, Minn.—Whether or not the white way to be installed shall be arc or incandescent system, is being considered by Water and Light Commission.

Newark, N. J.—Better illumination of Washington Park is being considered.

Newark, N. J.—Issuance of bonds to extent of \$650,000 to construct electric light plant and garbage destructor is being considered.

Phillipsburg, N. J.—Board of Trade has decided by unanimous vote to establish competitive lighting plant in town.

Springfield, N. J.—Additional lights have been ordered for various streets.

Schenectady, N. Y.—It is planned to install luminous way in State st., between Jay st. and point between Church and Ferry sts.

Devils Lake, N. D.—Great white way lighting system is to be installed.

Hamilton, O.—City Council is considering question of issuing \$10,000 of bonds for gas extensions.

Goldsboro, Pa.—Taxpayers will vote on Nov. 5 on increasing borough's indebtedness to extent of \$3,000 for purpose of erecting power house for lighting streets with electricity.

McKeesport, Pa.—Improvements to lighting system is planned.

New Castle, Pa.—New Wilmington Borough has been authorized to vote on \$9,000 bond issue at November election. Of proposed issue \$3,000 is to be used for purchase of gas engine and generator for municipal light plant, in order to enlarge and extend service.

Harrisonburg, Va.—Town Council has authorized a committee to have drawn

franchise for gas plant, and to advertise bids for same.

Pocahontas, Va.—City Fathers have voted to increase number of lights in city.

Manitowoc, Wis.—Manitowoc will vote on purchase of electric light plant as municipal venture at November election on Nov. 5.

CONTRACTS AWARDED.

Haverhill, Mass.—Municipal Council has decided to enter into 10-year contracts with Haverhill Electric and the Haverhill Gas Companies, each contract having cancellation clause, operative after 5 years.

Syracuse, N. Y.—Dennis R. McCarthy was low bidder for furnishing and installing the heating and ventilating plant at Municipal Bath House at \$3,630. William F. Murphy bid \$3,719 on work and Syracuse Heater Company \$3,866.

Philadelphia, Pa.—The Welsbach Street Lighting Company has been awarded contract for gasoline lighting for 1913, at \$29 per lamp per year, or approximate total of \$535,000.

Warwick, R. I.—Town Council has made contract with Narragansett Electric Lighting Company which provides for lighting of streets all night.

FIRE EQUIPMENT

Attalia, Ala.—New hose wagon will probably be purchased.

Monrovia, Cal.—Local fire department equipment probably will be increased in near future by an additional automobile fire truck.

Santa Clara, Cal.—Town will shortly purchase motor-driven fire apparatus.

Terra Bella, Cal.—City will purchase fire engine.

Tulare, Cal.—Bonds in sum of \$10,000 have been voted for purchase of motor fire engine.

Pueblo, Col.—Motorizing of local Fire Department is being considered.

Rocky Ford, Col.—Purchase of motor fire truck is being considered.

Moline, Ill.—Purchase of following apparatus is recommended: One motor hose wagon, two motor combination pumping engines and hose wagons, auto for chief, additional fire alarm boxes, etc.

Indianapolis, Ind.—As result of conference with other city officials, Board of Public Works has asked City Controller Wallace to recommend to City Council appropriation of \$110,000 for new fire headquarters building and municipal garage at southeast corner of Alabama and New York sts.

South Bend, Ind.—Specifications for \$6,500 hook and ladder truck for fire department, which was provided for in city's appropriation for next year, have been approved by Board of Public Safety. Bids will be received until the morning of Oct. 24. A 200-ft. chemical hose, 7 ladders and heavy hoist ropes are included in equipment which must go with machine.

Leavenworth, Kan.—City will purchase chemical motor truck for fire fighting purposes.

Wichita, Kan.—Purchase of auto is being considered by fire department.

Euclid, Me.—It has been voted to purchase new \$3,000 hook and ladder truck.

Boston, Mass.—New fire alarm station will be erected, to cost about \$225,000, with equipment.

Clinton, Mass.—Purchase of engine, truck and combination wagon is contemplated.

Hopedale, Mass.—Motor fire apparatus will probably be purchased.

Winchester, Mass.—Purchase of motor fire apparatus is contemplated.

Augusta, Me.—City will shortly erect new fire station to cost \$25,000.

Asbury Park, N. J.—Engineers of the National Board of Fire Underwriters recommend vastly improved water supply system, reorganization of fire department and practically new fire alarm system under properly qualified management.

Atlantic City, N. J.—Bonds in sum of \$50,000 are contemplated for California ave. fire station, \$30,000 for building and \$20,000 for automobile fire apparatus to be installed during coming year.

Gloucester, N. J.—Committee on Fire Apparatus has filed communication recommending certain equipments for firemen and chemical fire apparatus, and 50 ft. of fire hose. Same was considered at joint meeting of committee and Board of Fire Commissioners, and bids were ordered asked for.

Perth Amboy, N. J.—Installation of motor hose and chemical apparatus and combination chief's and chemical automobile is being considered.

Ventnor City, N. J.—Ordinance has been passed providing for issuance of \$3,000 of bonds for new fire apparatus.

Perth Amboy, N. J.—A majority of fire apparatus in this city may be changed from horse-drawn to motor-drawn vehicles.

Amsterdam, N. Y.—Amsterdam is considering purchase of automobile fire apparatus.

Canton, N. Y.—New fire alarm system will be installed.

Pearl River, N. Y.—Pearl River Hook and Ladder Company has decided to purchase Waterous automobile fire engine. New engine is of large and powerful type. It is of 63 horse-power, and 4 cylinders. It will carry 1,200 ft. of hose and will cost \$6,000.

Woodhaven, N. Y.—About 2,000 ft. of good hose is required by volunteer fire department.

Dayton, O.—Director of Public Safety Dodds has conferred with City Solicitor regarding matter of equipping three new auto fire wagons with chemical apparatus. This equipment costs \$250 for each wagon, and it will mean expenditure of approximately \$750 to equip three new auto fire wagons.

Chester, Pa.—Good Will Fire Company will build \$7,000 addition to its engine house.

Lebanon, Pa.—Ordinance has been passed making additional appropriation for purpose of erecting building for Perseverance Steam Fire Engine and Hose Company, of this city. Amount to be appropriated was \$3,300.

Sharon, Pa.—Purchase of motor fire truck is being considered by Council.

Wilkes-Barre, Pa.—Mayor has approved of contract which called for purchase of \$1,500 worth of Eureka fire hose at \$1.20 per ft.

Providence, R. I.—Purchase of motor aerial truck to cost about \$11,000 is urged by Fire Commissioners.

Dallas, Tex.—For construction of new fire station on Young st. to L. R. Wright & Son.

San Antonio, Tex.—City Electrician Conyers is now preparing estimate of cost of placing wires of San Antonio fire alarm system under ground.

Alexandria, Va.—Purchase of steam fire engine and combination hose and chemical wagon is recommended.

Petersburg, Va.—Finance Committee has decided to recommend to Council appropriation of \$9,950 for enlarging force and improving equipment of fire department.

CONTRACT AWARDED.

Caldwell, Idaho.—For 1,000 ft. of rubber jacketed hose, to Gutta Percha & Rubber Mfg. Co., at \$1.25 per ft. Other bids received were Gould Co., 80 cts. per ft., and Goodrich Co., \$1.11 per ft.

Houma, La.—By Board of Aldermen, to Eureka Fire Hose Co., for 1,000 ft. of hose.

Salisbury, N. C.—To Gamewell Fire Alarm Telegraph Co., of New York, for installing fire alarm system.

Williamsport, Pa.—It has been voted to recommend purchase of but 900 ft. of hose, as ordinance only called for expenditure of \$1,000. This will be divided between Fire Fabric Hose Company, of Elmira, and Gutta Percha & Rubber Company, of New York. Each will furnish 450 ft. of hose at \$1.10 a ft.

Taylor, Tex.—For furnishing 1,000 ft. of wax-treated hose, to Fabric Fire Hose Co., at \$1.05 per ft.

Spokane, Wash.—By Council for construction of fire department workshop at No. 3 station to C. A. Lansdowne at \$1,850.

BRIDGES

Tampa, Fla.—Engineer Warren has estimated that construction of temporary bridge across Hillsborough River will cost from \$12,000 to \$13,000.

Indianapolis, Ind.—Plans have been completed by Board of Park Commissioners for bridge across Crooked Creek, in Myers rd., which runs along west border of Riverside Park. Plans call for concrete arch bridge, 145 ft. long, faced with Indiana oolitic limestone, which will cost approximately \$20,000.

Bogalusa, La.—Plans and specifications are being drawn for steel bridge across Pearl River opposite Bogalusa.

Lyons, N. Y.—New bridge will shortly be erected by Oswego Bridge Company to span Canandaigua Lake outlet.

Oswego, N. Y.—Important matter which Board of Supervisors will be called upon to consider this fall will be that of building new bridge over Oswego River at Minetto to take place of present structure, recently damaged.

Oswego, N. Y.—Only one bid was received by County Superintendent of Highways on construction of bridge over Eight-mile Creek in Oswego town. Cuyler & Jenkins Contracting Company agrees to do work for \$1,323.37. Contract was not awarded.

Schenectady, N. Y.—Elimination of old Scotia bridge, and construction of modern highway from end of State st. over islands in river are being considered.

Utica, N. Y.—Common Council has ordered plans and authorized erection of temporary bridge over new river channel on N. Genesee st.; also ordered plans and estimate of cost of permanent bridge at same point.

Dayton, O.—Councilman Elmer Stockum, of Eleventh Ward, will introduce resolution looking to appropriation of money for construction of bridge over Pennsylvania railway at Seminary ave. It is anticipated that improvement will cost approximately \$12,000.

Wilkes-Barre, Pa.—Nanticoke is to have new county bridge to span Susquehanna River at that point. At meeting of County Commissioners resolution was adopted to employ competent engineer to prepare plans and specifications for new bridge as recommended by grand jury and approved by court. No engineer has been selected as yet.

CONTRACTS AWARDED.

Marysville, Cal.—By Board of Supervisors of Yuba County to Portland Concrete & Pile Co., Portland, Ore., at \$31,600, for construction of concrete bridge at Parks Bar, Smartsville.

Marysville, Cal.—By County Board of Supervisors, to Thomas & Post, of Los Angeles, for erection of Parks Bar Bridge, at \$36,000.

Santa Barbara, Cal.—By city, for constructing reinforced concrete bridge across Mission Creek, at State st., to Russell-Green-Foell Co., Higgins Bldg., Los Angeles.

Red Bluff, Cal.—By Board of County Supervisors to Jenkins & Wells, Sacramento, at \$9,445, for construction of steel bridge over Elder Creek, on Red Bluff-Corning road. Bridge will be 415 ft. long with five spans.

Woodbury, N. J.—By Board of Chosen Freeholders, to Owego Bridge Co., Arcade Bldg., Philadelphia, Penn., at \$22,250, for construction of new bridge over Mantua Creek, at Paulsboro.

Hamilton, O.—By Board of Commissioners of Butler County to A. F. Foy, Dayton, at \$12,127, for construction of 50-ft. bridge at High st.

Wapakoneta, O.—By Board of Commissioners of Auglaize County for construction of concrete bridge over Auglaize River, as follows: superstructure to Wynkoop & McGormely Co., Toledo, at \$5,194, and sub-structure to Wapakoneta Cement Block Co., at \$1,875.

Beaver, Pa.—By Board of County Commissioners, to Shilling & Zoller, 120 Madison ave., Youngstown, O., for incasing in concrete towers of Ohio River Bridge.

MISCELLANEOUS

Los Angeles, Cal.—Should recommendation of Supply Committee of City Council be accepted by municipal legislative body, three Premier automobiles will be purchased by city for use of emergency hospital and police department. Five bids were submitted to Supply Committee, bidders being agents for Locomobile, the Garford, the Case, the Premier and the Oldsmobile. Bid on Garford cars was \$2,990 for hospital car and \$2,900 each for police machines. The Locomobile bid \$5,280 on all three cars, while Case bid was \$2,500 each for three machines. The Oldsmobile bid was \$3,000 each for three cars, while bid on the Premier was \$3,250 for three machines.

Oakland, Cal.—Steps are well under way for establishment of modern and up-to-date police station in East Oakland, commonly known as annexed district.

Richmond, Cal.—City Council has passed resolution calling for special election to be held in November to pass upon proposed issue of \$1,000,000 in bonds for improvement of inner and outer harbor; improvement work, as contemplated, covering about 1,000 acres

of land. Tunnel through hills to outer harbor is one of projects proposed.

San Francisco, Cal.—Board of Public Works is considering new design for proposed safety station at Ninth and Market sts.

San Francisco, Cal.—Report of City Engineer on garbage disposal situation suggests sale of old garbage disposal plant and immediate completion of incinerator at North Beach in sufficient size to care for all city's garbage, together with operation of plant at Islais Creek, which will be completed first of year. Supervisor Payot stated that this plan could be carried out with funds at hand.

Atlanta, Ga.—Plans and drawings for city's new crematory have arrived and are now being examined by officials of Sanitary and Construction Departments.

Augusta, Ga.—Special hospitals committee has directed G. L. Preacher, the architect, who is preparing plans for hospitals, to advertise for bids on first part of work, and let contract within next three weeks. Bids will be called for at once.

Boston, Mass.—Mayor has recommended that City Council appropriate \$75,000 additional for City Hall annex.

Haverhill, Mass.—Building of retaining wall along water front, reaching to harbor land and giving city new dumping ground as well as room for rubbish destroying incinerator is now being taken up and Alderman Hood has offered order in Municipal Council for City Engineer to prepare plans and estimates.

Grand Rapids, Mich.—Ways and Means Committee of Council has decided to advertise for bids on disposal of city's garbage.

Elizabeth, N. J.—Issue of \$175,000 Union County bonds will be sold. They include \$85,000 county hospital, \$60,000 road improvement, and \$30,000 bridge bonds.

Newark, N. J.—Definite action toward erection of municipal garbage incineration and light generating plant has been taken by Board of Works when it passed resolution asking Common Council to authorize bond issue of \$650,000 for this purpose.

Newark, N. J.—Issuance of bonds to extent of \$650,000 to construct garbage destructor and electric light plant is being considered.

Brooklyn, N. Y.—The Board of Estimate has reported total of commitments for public improvements for Borough of Brooklyn for which preliminary or final authorization had been given since Jan. 1, as totaling \$4,648,600, and for Queens, \$1,482,920, as compared with \$476,500 for Manhattan, and \$2,437,100 for Bronx, and \$204,300 for Richmond.

Buffalo, N. Y.—The Columbia National Bank has been awarded \$188,000 worth of park bonds, \$135,000 police and fire department bonds, and \$50,000 hospital bonds.

Niagara Falls, N. Y.—Appropriation of \$24,000 is available for bronze railings on bridge leading from main land to Green Island, and from thence to Goat Island.

Rochester, N. Y.—In message to Common Council Mayor Edgerton advocated municipal museum in Building 9 at Exposition Park, and ordinance providing for it was passed. Mayor proposed that museum be under supervision of trustees of Rochester Public Library.

Syracuse, N. Y.—Communication received from Park Commission asked Board to advertise for bids providing that branch of city government with stoneware pipe estimated to cost \$2,250.

Cincinnati, O.—City is considering erection of garbage reduction plant.

Dayton, O.—Contract for Great Miami River improvement, the 2-mile work from Washington st. bridge to Big Four Railroad, was awarded to Contractors Gephart & Kline, at their bid of \$359,789, by Board of Control. Only other bidder for this gigantic undertaking was R. P. Sebold, whose bid was \$373,149. Greatest part of work, that of constructing levee, and horseshoe levee, found big variance in bids of two concerns. Gephart & Kline bid for work \$271,200, while Mr. Sebold's bid was \$290,040.

Youngstown, O.—Breed & Harrison, of Cincinnati, have been awarded \$200,000 issue of bonds for city building.

Philadelphia, Pa.—Councils have adopted resolution submitting proposed \$7,000,000 loan to vote of people on Nov. 5. This completes necessary legislation prior to vote on loan.

Williamsport, Pa.—Committee will advertise for bids for purchase of automobile police patrol, bids to close at noon on Oct. 25.



Wood Block Pavement



Courtyard of New Orleans Gas Light Company, Showing Wood Block Pavement.

A Wood Pavement That Lasted Thirty-Two Years

Thirty-two years ago the New Orleans Gas Light Company paved a portion of their courtyard with creosoted wood blocks. The courtyard was used as a driveway and has had steady wear.

It has never been repaired on account of wear and is a perfect pavement to-day. How much longer it will last without repairs no one can predict until some wood block pavement somewhere actually wears out.

Wood Blocks laid with the grain vertical cannot split or be crushed. The only effect of traffic upon them is the hammering down and matting of the end fibres of the wood. This process makes the surface so hard that, after the first year; no wear is discernible. The pavement practically makes itself traffic-proof.

Wood Block pavement is the only pavement of which this is true. Wood Block pavement is to be recommended wherever heavy traffic necessitates long-lived pavement.

Wood Block pavement is to be recommended for streets where quietness is desirable, as, for instance, in office-building districts, on residential streets and around hospitals, schools, courts, etc.

Wood Block pavement is to be recommended for the main "show streets" of towns, for silence is the greatest beauty a pavement can have.

Wood Block pavement is to be recommended for bridges, because it is the only durable light-weight pavement. Also for shop floors, track paving, court yards, private driveways, etc.

Booklet with Further Information on Request.

U. S. WOOD PRESERVING CO., 165 Broadway, NEW YORK

Wilkes-Barre, Pa.—First installation of Wilkes-Barre's \$35,000 bond issue has been sold, amounting to \$75,000. Successful bidder was N. W. Halsey & Co., New York City, at \$75,847.50.

Petersburg, Va.—Finance Committee recommends appropriation of \$2,500 for purchase of auto-patrol wagon for use of police department.

Petersburg, Va.—About \$15,000 has been appropriated for improvements to police and fire departments.

CONTRACT AWARDED.

Hartford, Conn.—For erection of building to house machinery of east side pumping station, by Board of Contract and Supply, to only bidder, the H. Wales Lines Co., of Meriden, price being \$33,848.

Kalamazoo, Mich.—City Council has authorized Police and Fire Commission to sign contract with Thomas Foy, local

contractor, for erection of new police station and city jail. Bid of Foy, which was lowest received, was \$22,178.

Syracuse, N. Y.—By Board of Contract and Supply, for 450 voting booths, to Penn Constn. Co., of Marietta, Pa., the lowest bidders, at \$2,002.50.

Dayton, O.—By Board of Control, contract for new automobile patrol, to Speedwell Motor Car Co., at its bid of \$3,880.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Washington	Walla Walla	Oct. 14	Constrn. highway No 3	Co. Comrs.
Washington	Kalama	Oct. 15	Constrn. four blocks hard surface	Town Clk.
New York	New York	Oct. 17, 2 p.m.	Repairing flag & cement sidewalks	G. McAneny, Boro. Pres.
Minnesota	Hastings	Oct. 21, noon	Constrn. state roads	R. A. Hoffman, Co. Aud.
Louisiana	Lake Charles	Nov. 6	Constrn. asphalt & wood block pavement	City Clk.
Ohio	Toledo	Oct. 23, noon	Constrn. street improvements	F. R. Stockton, Secy.
SEWERAGE				
Washington	Walla Walla	Oct. 15	Constrn. lateral sewers	City Comrs.
WATER SUPPLY				
Wisconsin	Turtle Lake	Oct. 14	Drilling well 200 ft deep	F. G. McKenzie, Clk.
Washington	Chehalis	Oct. 21, 3 p.m.	Constrn. water works, including 88,000 ft. 14, 35,000 ft. 4-in., 41,000 ft. 6-in., 11,000 ft. 8-in. wooden water mains, &c.	W. Brunzweig, City Clk.
Ohio	Toledo	Oct. 22, noon	Furn. eleven large gate valves & 1 sluice gate	J. R. Cowell, Dir. Pub. Serv.
Washington	Grand View	Oct. 28, 7 p.m.	Constrn. water works system complete	W. H. Dunbar, Twn. Clk.
BRIDGES				
Colorado	Denver	Oct. 15, 11 a.m.	Constrn. concrete highway bridge	S. B. Bradley, Pres.
MISCELLANEOUS & INCLUDING LIGHTING STANDARDS.				
Georgia	Macon	Oct. 31	Constrn. county jail	Comrs.

STREET IMPROVEMENTS

Los Gatos, Cal.—Voters have authorized bond issue of \$81,000, of which \$38,000 is for street improvements.

Long Beach, Cal.—City Council has passed resolution giving Board of Public Works power to construct concrete driveway to beach east of Auditorium and west of municipal pergola.

San Francisco, Cal.—Petition for cutting through of Stevenson st. at Eighth st. as to have it extend from Eighth st. to Ninth st. has been approved by City Engineer.

Tampa, Fla.—Board of Public Works has decided to advertise for 5,000,000 vitrified brick to be used for paving, to be delivered at rate of 500,000 per month.

Silver City, Ida.—Bridge will be constructed across Birch Creek, about 25 miles from Mountainhome.

Algona, Iowa.—Council has passed resolution of necessity of paving two miles of asphalt.

Cedar Rapids, Iowa.—Council has been petitioned for concrete paving on 27th st., from Marion boul. to B av.

Sioux City, Iowa.—City Council is contemplating road to Leeds.

Lake Charles, La.—Ordinance has been passed providing for paving of Ryan st., from Belden to Railroad ave., with creosoted wood blocks.

Akron, O.—City Council is said to have passed ordinance providing for the improvement of Fairfield, Harter and Garfield aves. and various other streets.

Corsicana, Tex.—City Council has ordered election to be held Oct. 29 to determine whether or not bonds to amount

of \$20,000 shall be issued for street paving.

Dallas, Tex.—County Commissioners' Court has ordered construction of about one and one-quarter miles of first-class 60-ft. road to connect West Dallas with Cement City.

Ogden, Utah.—Jurisdiction has been gained for paving of District No. 106, which embraces Wall ave., between Twenty-first and Twenty-third sts., and Lincoln ave., between Twenty-fifth and Twenty-sixth sts.

Paluski, Va.—At meeting of Board of Supervisors a tire issue of \$100,000 of bonds for macadamizing and otherwise improving certain roads and bridges in Dublin District in this county, was awarded and sold to Weil, Roth & Co., of Cincinnati, Ohio.

Aberdeen, Wash.—It is proposed to pave Michigan ave., River, K. & West Hecon sts.

Spokane, Wash.—Council has ordered readvertising of contracts for grading F st., Rosamond to Sixth ave., estimate \$3,452, and separate contract estimate to same price for curbing, sidewalking, crosswalking and building drain on same, two on which no bids were received. Following are bids received: Grading and curbing Astor st., Boone to DeSmet ave., estimate \$700; G. H. Weller, \$695; C. M. Payne, \$645; Mitchell Brothers, \$574. Grading and curbing Jefferson st., Mallon to Broadway, estimate \$1,100; A. G. Moody, \$1,045. Sidewalking and crosswalking and building a drain on Boone ave., Division to Washington st., estimate \$2,000; Mitchell Brothers, \$1,761. Grading, curbing

and sidewalking Gordon ave. and building a connection with Post st., Kierman ave. to Monroe st., estimate \$2,400; C. M. Payne, \$2,140; Mitchell Brothers, \$2,063.

Sheboygan, Wis.—Sheboygan county will spend \$10,300 for state road improvement.

CONTRACTS AWARDED.

Los Angeles, Cal.—To Munoz & Munoz to repave floor of Downey av bridge at cost of \$9,719.93 by Board of Public Works. Work contracted for includes laying of granite blocks in concrete bases. It is to be completed within 120 days.

Mattoon, Ill.—By Board of Local Improvement for paving 32d st. with concrete to Thornton & Michael, for \$7,064, and contract for paving 12th st. with brick to A. C. Loomis, for \$12,795.

Hamburg, Iowa.—To Asphalt Paving Co., of Waterloo, for 59,000 yards of bituminous concrete.

Alexandria, La.—To Hudson Construction Co. for paving sidewalks on west side of Lee st., from Bolton to Vance av.

Miles City, Mont.—To Day Oakes for paving in Dist. No. 30, for \$17,140.

Paterson, N. J.—For paving Marshall st., to Kramer Contracting Company for \$3,996. Street will be paved with seven inch concrete with flushed surface. Contract for work on Cross st. was given to same contractors, they offering to do work for \$1,465.85.

Rye, N. Y.—Bids for improvement of several roads have been received. They



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BESSEMER LIMESTONE CO.

Youngstown, Ohio

are as follows—(a) Bermudas, (b) Trinidad, (c) Standard, (d) Tarvia, (e) Extras: Forest av. resurfacing; appropriation, \$14,000—E. L. Erbeck, (a) \$21,590, (b) \$20,320, (c) \$20,320, (d) \$18,432; F. E. Murray Contracting Co., (a) \$19,812, (b) \$20,066, (c) \$16,764, (d) \$16,764; Billington Contracting Co., (a) \$19,812, (b) \$19,812, (c) \$16,510, (d) \$16,510; Daly & Merritt, (a) \$19,050, (b) \$19,050, (c) \$15,494, (d) \$15,494; A. G. Milligan (Flushing), (a) \$21,590, (b) \$21,590, (c) \$18,542, (d) \$16,484.60. Grace Church st. resurfacing; appropriation, \$6,200—Daly & Merritt, (a) \$8,580, (b) \$8,580, (c) \$7,150, (d) \$7,150; Billington Contracting Co., (a) \$8,250, (b) \$8,250, (c) \$6,600, (d) \$6,820; F. E. Murray Contracting Co., (a) \$8,580, (b) \$8,580, (c) \$7,260, (d) \$7,260; E. L. Erbeck, (a) \$9,350, (b) \$8,800, (c) \$8,800, (d) \$7,920; A. G. Milligan, (a) \$9,350, (b) \$9,350, (c) \$8,030, (d) \$7,139. Stuyvesant av. rebuilding; appropriation, \$5,150—A. G. Milligan, (a) \$7,810, (c) \$6,050, (d) \$5,225; E. L. Erbeck, (a) \$6,050, (b) \$5,775, (c) \$5,775, (d) \$5,500; F. E. Murray Contracting Co., (a) \$5,610, (b) \$5,610, (c) \$4,895, (d) \$5,005; Daly & Merritt, (a) \$5,775, (b) \$5,775, (c) \$5,390, (d) \$5,390; Billington Contracting Co., (a) \$5,940, (b) \$5,940, (c) \$5,225, (d) \$5,225; Frank J. Rich, (a) \$6,050, (b) \$6,050, (c) \$5,225, (d) \$5,225. Rye Beach av.; appropriation, \$12,500—Billington Contracting Co., (a) \$4,968, (b) \$4,968, (c) \$4,370, (d) \$4,370, (e) \$450; Daly & Merritt, (a) \$4,830, (b) \$4,830, (c) \$4,508, (d) \$4,508, (e) \$525; F. E. Murray Contracting Co., (a) \$4,370, (b) \$4,370, (c) \$3,910, (d) \$3,956, (e) \$405; E. L. Erbeck, (a) \$5,060, (b) \$4,830, (c) \$4,830, (d) \$4,508, (e) \$412.50. Palisade rd; appropriation, \$5,000—Daly & Merritt, (a) \$2,100, (b) \$2,100, (c) \$1,960, (d) \$1,960, (e) \$1,785; F. E. Murray Contracting Co., (a) \$1,900, (b) \$1,900, (c) \$1,580, (d) \$1,700, (e) \$1,487.50; E. L. Erbeck, (a) \$2,200, (b) \$2,100, (c) \$2,100, (d) \$1,960, (e) \$1,610; Greenwicz Contracting Co., (a) \$1,918, (b) \$2,020, (c) \$1,940, (d) \$1,800, (e) \$2,070; Billington Contracting Co., (a) \$2,160, (b) \$2,160, (c) \$1,780, (d) \$1,780, (e) \$1,702.50. Lowest bidders were: Forest av. work, Daly & Merritt; Grace Church st., Billington Contracting Company; Stuyvesant av., F. E. Murray

Contracting Company; Rye Beach av., F. E. Murray Contracting Company; Palisade road, F. E. Murray Contracting Company.

Nashville, Tenn.—Twelve cents per lineal foot for sidewalks and 35 cents for curbing was bid of Adamant Stone Roofing Company for construction of granitoid curbing and sidewalks on Broadway, between 12th and 16th avs. and on West End av., between 16th and 23d avs.

Seattle, Wash.—To Alfred Swanson for planking Kenyon st., at \$14,284. A. Joseph & Co., received contract for sewers in 8th av. S., at \$1,049; Barber Asphalt Paving Co., for asphalt on Spokane and W. Spokane sts., \$21,785.

SEWERAGE

Los Gatos, Cal.—Voters have authorized bond issue of \$81,000, of which \$30,000 is for sewerage system.

Tampa, Fla.—It had been planned to spend \$40,000 in building storm sewers to take care of surface water.

Blackduck, Minn.—Council is considering three blocks of sewers and construction of purification tank. Estimated cost, \$7,000.

Hamilton, O.—Engineer F. E. Weaver has estimated cost of reconstructing storm sewers in Lindenwald with main line on Benninghofen av., at \$5,657.

Portland, Ore.—City Engineer Hurlburt is said to have completed plans for intercepting sewer from Marquam Gulch in South Portland to city limits; estimated cost, \$500,000.

Central Falls, R. I.—Plans have been completed by O. Perry Sarie, of Providence, for sewer system, including sewage disposal, and estimates cost at about \$40,000. Imhoff system will probably be used.

Temple, Tex.—City Council has ordered election to be held Nov. 5, purpose being to permit people to vote upon question of municipal ownership of sewer system. It being proposed to purchase system owned by Temple Sanitary Sewer Company for consideration not to exceed \$50,000, and to expend additional \$25,000 in extending and improving same.

Wichita Falls, Tex.—City Council has set Nov. 4 for election for purpose of voting \$22,000 worth of bonds for street improvements and construction of municipal septic plant to take care of sewage. City sewer is now turned into Wichita River, but this probably will be changed.

Antigo, Wis.—City Engineer has prepared plans for trunk line sewer system to cost \$30,000.

Bangor, Wis.—Village has voted \$14,000 bonds for sewer system.

CONTRACTS AWARDED.

Schuyler, Neb.—To Katz-Craig Construction Co., of Omaha, for construction of sewer system.

Nashville, Tenn.—T. I. Curtis & Son were lowest bidders before board of public works for construction of sewer in 17th av., north, alley No. 634 and 29th av., north. Bid was \$4,171.75 and contract will likely be awarded to them. Other bidders were John Broderick, Quinn & Ellis, W. B. Garrett and the Mimms-Sneed Company.

WATER SUPPLY

Chester, Mont.—Town has authorized \$22,000 in bonds for waterworks system.

Bassett, Neb.—Bonds in sum of \$10,000 have been voted for waterworks.

Doniphan, Neb.—Town has voted to install waterworks.

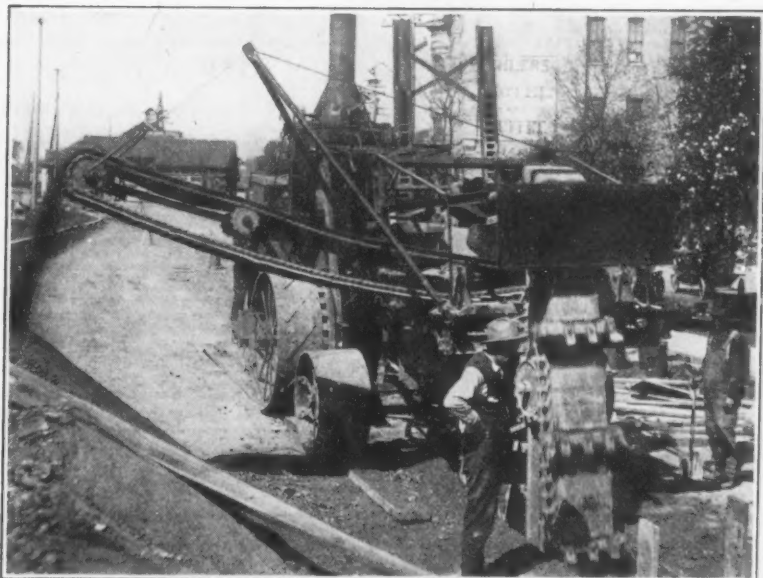
South Sioux City, Neb.—Election has been called for purpose of voting on \$25,000 bond issue for waterworks.

Newport, Ore.—Council has decided to submit to voters proposition to issue \$10,000 in bonds for waterworks.

Dallas, Tex.—Board of Commissioners has adopted resolution offered by Waterworks and Sewerage Commissioner R. R. Nelms recommending that petition of American Water Softening Company of Philadelphia, Pa., to sublet portion of work of construction of water purification plant to Fred A. Jones Company.

Farmington, Wash.—Bonds in sum of \$10,000 have been voted for about 2 miles of mains and water tank.

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Ft. Dodge, Ia.—For constructing a 2,000,000-gal. concrete reservoir from plans of Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., to Zitterell & Sullivan, Webster City. Bids as follows:—(1) C. C. Nagard, Council Bluffs; (2) Des Moines Bridge & Iron Co., Des Moines; (3) Black Hawk Contr. Co., Waterloo; (4) Chambers & Dobson, New Hampton; (5) Tanner Bros., Webster, S. D.; (6) J. W. Turner Improv. Co., Des Moines; (7) Zitterell & Sullivan, Webster City; (8) Midland Bridge Co., Kansas City, Mo.; (9) W. D. Lovell, Minneapolis, Minn.:

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7,014 cu. yds. excavation	\$0.50	\$0.45	.....	\$0.30	\$0.25	\$0.60	\$0.35	\$0.90	\$0.25
505 cu. yds. plain concrete.....	7.50	7.00	\$7.35	4.50	6.00	5.00	5.33	7.80	6.00
1,508 cu. yds. reinforced concrete.....	8.00	9.00	8.65	8.55	9.00	8.00	8.45	7.86	7.00
21,228 lbs. No. 41 American Steel & Wire Co. mesh reinforcement .....	.035	.04	.044	.04	.06	.06	.05	.054	.05
207,000 lbs. reinforcing steel.....	.025	.035	.0284	.025	.03	.03	.031	.0294	.03
Lump sum bid for furnishing material and constructing reservoir (excav. and backfill excluded)	\$30,655	\$27,214	\$35,385	\$24,440	.....	\$29,900	.....	\$37,843	.....
Lump sum bid for furnishing material and labor and constructing reservoir complete.....	\$34,155	\$29,714	.....	\$26,500	\$26,939	\$34,500	\$24,807	\$44,275	\$28,700

CONTRACTS AWARDED.

Harmon, Ill.—Following contracts have been awarded for furnishing material for construction of waterworks system. U. S. Cast Iron Pipe & Foundry Co., cast iron pipe and specials; Rensselaer Valve Co., Troy, N. Y., hydrants, valves and caps; Chicago Bridge and Iron Works, Chicago, steel tank and tower.

Logan, Ia.—By Town for waterworks improvements to Des Moines Bridge & Iron Co., of Des Moines, for \$17,100. Engineer, H. H. Henningson, of Omaha, Neb.

Ann Arbor, Mich.—For laying water mains on campus for new campus fire protection to Schumacker & Backus, of Ann Arbor, for \$30,997.

Millard, Neb.—For constructing water works from plans of Bruce & Standeven, of Omaha, to Elkhorn Constr. Co., 449 Main St., Fremont, for \$9,995.

Spokane, Wash.—By city council for 400 water meters to Hersey Manufacturing Co. for \$5.96 each. This company was low bidder.

Wheeling, W. Va.—Board of control has opened bids for proposed construction of Mozart Hill water system and lowest bidders were recommended to council. Following recommendations were made: To Trimble & Lutz, for tanks and piping, \$2,913; for foundation, \$960. To Deane Steam Pumping Co., for two triplex pumps, motors, piping, wiring and starting device, \$3,935. To United States Iron Pipe and Foundry Co., for cast iron pipe and fitting, per ton, \$23.90. To Trimble & Lutz, for rising main to be placed at every 100 feet up the hill, \$2,073. The contract for building the pumping station was awarded to H. S. Cunningham at his price of \$2,217, he being only bidder.

LIGHTING AND POWER

Alabama City, Ala.—City Council has granted franchise to Alabama Power Development Co., of Talladega, Ala.

Gadsden, Ala.—Contracts have been let to extend great white way one block, between Fourth St. and Fifth St., on Broad St. When lights are installed Gadsden will have white way almost quarter of mile long. Further extensions are probable.

South Pasadena, Cal.—Petitions are being prepared by T. P. Lukens, of Pasadena, to be circulated on Orange Grove Ave. north of Mission St. in South Pasadena, for installation of ornamental lighting system, to connect with that of Orange Grove Ave. in Pasadena.

Campbellsburg, Ind.—City Council has granted J. H. James 25-year franchise to build and operate electric light plant.

Greenfield, Ind.—Town Board and County Commissioners will shortly let contract for installation of cluster light system in this city.

Churdan, Ia.—Citizens have voted to issue \$10,000 bonds for electric light plant.

Glidden, Ia.—Installation of electric light plant has been authorized.

Alexandria, La.—Two plans are being considered for furnishing electric current to light Pineville.

Claca City, Minn.—Bonds in sum of \$5,000 have been voted for installation of village electric light plant.

Natchez, Miss.—Installation of electric power plant in connection with water works pumping station is being considered.

Bassett, Neb.—Bonds in sum of \$3,000 have been voted for electric lights.

Doniphan, Neb.—Town has voted to install electric light.

Millville, N. J.—Solicitor Louis H. Miller has notified Council that order retaining city from proceeding with erection of municipal electric lighting plant has been modified by Supreme Court and that it may now arrange to build.

Cogswell, N. D.—Franchise has been granted W. E. Johnson and H. L. Saylor for electric light plant.

Coleman, Tex.—Joseph A. Robertson and Lewis A. Robinson have received from City Council of Coleman franchise for furnishing natural gas to city. They propose to furnish this gas from their wells in Trichham field in this county.

Wichita Falls, Tex.—The North Texas Gas Co. of this city is preparing to lay 12,000 ft. of additional gas pipe.

Wichita Falls, Tex.—Plans have been announced by Strickland interests covering sweeping enlargement of city's lighting facilities. Consummation of these plans will be followed by substantial extension of city's water and sewer facilities.

Ogden, Utah.—Improvement involving expenditure of \$60,000 is to be made in Ogden gas plant.

Manitowoc, Wis.—Purchase of local electric light plant will be voted on.

CONTRACTS AWARDED.

Willmar, Minn.—To Wm. Bros. Boiler & Manufacturing Co. of Minneapolis for steam boiler, at \$1,140.

FIRE EQUIPMENT

Red Wing, Minn.—Installation of motor driven fire apparatus is contemplated.

St. Paul, Minn.—Fire board is considering purchase of motor driven apparatus to cost \$100,000.

Oshkosh, Wis.—Purchase of auto fire apparatus is recommended.

BRIDGES

Tampa, Fla.—Board of public works has decided to build pontoon bridge across river at Jackson St.

St. Wayne, Ind.—It is said that City Council will shortly ask for bids for construction of bridge across St. Mary's River on Harriman St.

MISCELLANEOUS

Los Gatos, Cal.—Voters have authorized bond issue of \$81,000, of which \$10,000 is for construction of town hall and \$6,000 for purchase of park property.

Oroville, Cal.—Plans are being pre-

pared for establishment of series of municipal parks in Oroville.

Santa Monica, Cal.—Two municipal markets will be recommended by special committee appointed by city council. One market will be established on Ashland Ave., east of Main St., and other on Utah Ave., east of Third St., for north side consumers.

Springfield, Ill.—City police department will shortly have 7 passenger automobiles. Hunter Auto Company in South Fourth St. is furnishing the machines.

Clifton Forge, Va.—Sale of \$190,000 worth of bonds is being discussed for local improvements.

Oshkosh, Wis.—Purchase of automobile patrol is recommended.

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OCTOBER 17, 1912

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(WEEKLY)

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Phillipsburg, N. J.

"The following data may be of interest to you in view of the fact that for the past two years we have treated our streets, under various circumstances, with "Tarvia B" and "Tarvia X."

The streets which were originally built of the common system of waterbound macadam, we have treated with "Tarvia B" at an average cost of three and six-tenths cents (3-6/10c.) per square yard, according to our City Engineer's figures. The streets so treated are to-day in a better condition than they were at any time in their history. We take pleasure in recommending this system of treating such streets, as we find it the most permanent and economical method of treatment that we have so far discovered.

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(Signed) EDWARD BRILL,

Chairman of Street Committee.

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